Existing Characteristics

2.0

Photos 1 and 2: Kenilworth Avenue is a commuter route that borders the Anacostia Park, residential neighborhoods, and the CSX and Metrorail corridors.

This chapter focuses on understanding the existing characteristics of the Kenilworth Avenue Corridor within the study area. These characteristics influence how the corridor currently functions, and affect future improvements. Characteristics addressed include: regional context and function; local context including the natural environment and land use; urban design; pedestrian and bicycle experience; existing infrastructure and traffic conditions; and public transportation.

Summary of Existing Characteristics

Regional Context and Function

- Kenilworth Avenue is a commuter route, an extension of the ceremonial entrance routes to the nation's capital, and a community access route.
- Kenilworth Avenue is located within the Anacostia River watershed, one of the most densely populated sub-watersheds in the Chesapeake Bay Regional Watershed.

Local Context

- Within the study area, the roadway borders residential neighborhoods, some commerical and industrial uses, the CSX Railroad/ Metrorail corridors, and the Anacostia Park (see Photos 1 and 2).
- Two Metrorail Stations are located within the study area. The transportation system will be influenced in the future by proposed transit-oriented developments adjacent to these stations, including the Government Center and the new Parkside community near the Minnesota Avenue Station.

Urban Design

- Visual quality along the corridor varies from an open parkway-like setting in the south to an urban corridor in the north.
- The corridor does not provide a sense of orientation to the adjacent neighborhoods for both the visitor and the local community.

Pedestrian and Bicycle Experience

- Kenilworth Avenue, and the CSX Railroad and Metrorail lines, create a significant obstacle to all modes of travel, especially for east-west movement between adjacent neighborhoods, schools, parks, and other attractions. The Anacostia River further adds to these obstacles, restricting movement between neighborhoods and open space to its east and west.
- Safety is a concern when accessing Metrorail stations and the waterfront from the adjacent neighborhoods.

Existing Infrastructure and Traffic Conditions

- Local community connections are poor as the infrastructure focuses on serving the commuter population; however, public input showed that safety is a concern and increased connectivity may be detrimental.
- The level of service (LOS) is unacceptable for the majority of intersections within the corridor. A high accident rate was observed between Benning Road and Eastern Avenue.

Public Transport

- While the area is served well by transit, rail and transit upgrades could improve system capacity and attractiveness, thus reducing dependence on automobile trips in the corridor.

2.1 Regional Context and Function

Kenilworth Avenue serves three principal functions:

- a major commuter route, carrying thousands of vehicles daily between Washington, DC and its Maryland suburbs;
- an extension of the northern entrance routes for visitors to the nation's capital; and
- an access route for the adjacent communities.

Kenilworth Avenue, also known as DC 295, is part of a system of expressways on the east side of the Anacostia River that links Indian Head Highway (MD 210), Interstate 395 (I-395), and Interstate 295 (I-295) to the south, and the Baltimore-Washington Parkway (MD 295) and US Route 50 (US 50) to the north (Figure 2.1).

The corridor within the study area is the southern extension of the Baltimore-Washington Parkway, the ceremonial entrance route from the north to the nation's capital, and a designated scenic byway in the State of Maryland. Like the parkway, Kenilworth Avenue is a limited-access roadway.

Kenilworth Avenue connects to Pennsylvania Avenue and East Capitol Street, two of Washington DC's major thoroughfares connecting to the U.S. Capitol and the White House. The Kenilworth Avenue corridor provides links between neighborhoods via Benning Road, Nannie Helen Burroughs Avenue, and Minnesota Avenue, all of which are part of the Great Streets Initiative, and Eastern Avenue, which also serves as the DC-Maryland boundary.

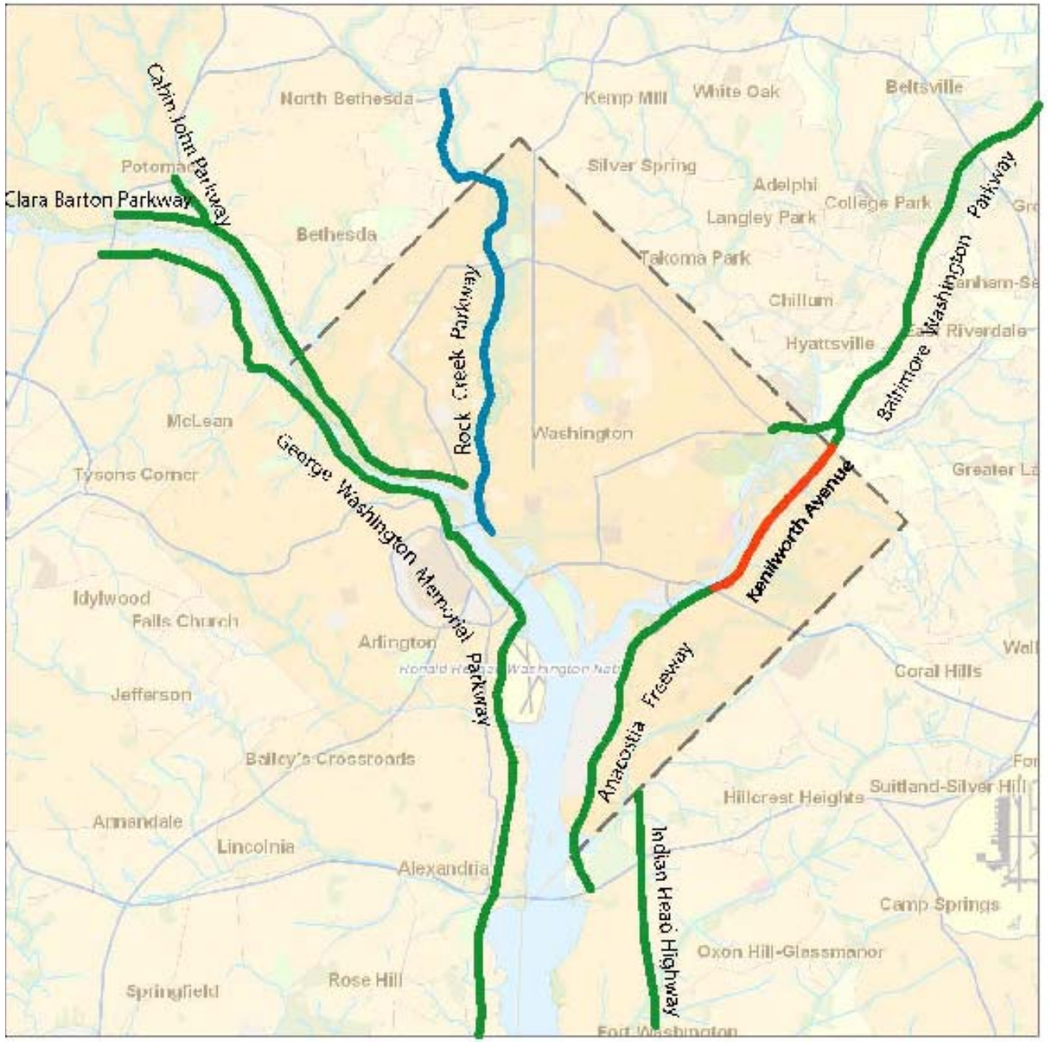

Figure 2.1: Kenilworth Avenue is a major commuter route between Washington, DC and its Maryland suburbs.

Photo 3: Kenilworth Avenue is an extension of the BW Parkway, a designated scenic byway in Maryland.

Photo 4: Eastern Avenue serves as the DC-Maryland boundary and provides the northern gateway into the District along Kenilworth Avenue.

2.2 Local Context

2.2.1 Environmental Features

The Kenilworth Avenue Corridor is part of the urban system that affects the health of the Anacostia River watershed.

The study area includes several wetland areas adjacent to the roadway, especially in the vicinity of Eastern Avenue, that will influence future changes along the corridor.

The corridor is somewhat aligned parallel to the Anacostia River and below the Anacostia Hills, that provide a sense of orientation to commuters.

Anacostia River Watershed
The watershed covers approximately 176 square miles within Maryland and Washington, DC. The Anacostia River is a tributary of the Potomac River, which flows into the Chesapeake Bay approximately 108 miles downstream from the study area.

The watershed has been altered considerably through the years, mainly due to agriculture and urbanization. The Nacotchtank Indians, a semi-agricultural tribe, settled in the juncture of the Potomac and Anacostia rivers in what is now Washington, DC. From the first European settlement to the Civil War, the Anacostia watershed was progressively deforested for agricultural uses (i.e., tobacco, corn and cotton). Continuous, heavy agriculture caused soil erosion and sedimentation, which led to the creation of "mud flats" that interfered with natural hydrology and shipping.

Today, 70-percent of the Anacostia watershed is urbanized. It is the most densely populated sub-watershed in the Chesapeake Bay regional watershed. Water quality in the watershed is severely degraded due to stormwater pollution from point and non-point sources in Montgomery and Prince George's Counties, as well as the combined sewer system in Washington, DC that overflows into the river during heavy rains.

Water quality in the District of Columbia is monitored by the Water Quality Division of the Department of Health, Environmental Health Administration, and is reported to the US Environmental Protection Agency and Congress every two years. According to recent reports for the District of Columbia, the water quality of the Potomac and Anacostia Rivers is not deemed safe for primary contact recreation (i.e., swimming) or for human consumption of fish or shellfish.

The Chesapeake Bay Agreement and the Anacostia Waterfront Initiative are two legislative efforts aimed at making the watershed safe for aquatic life and human activity.

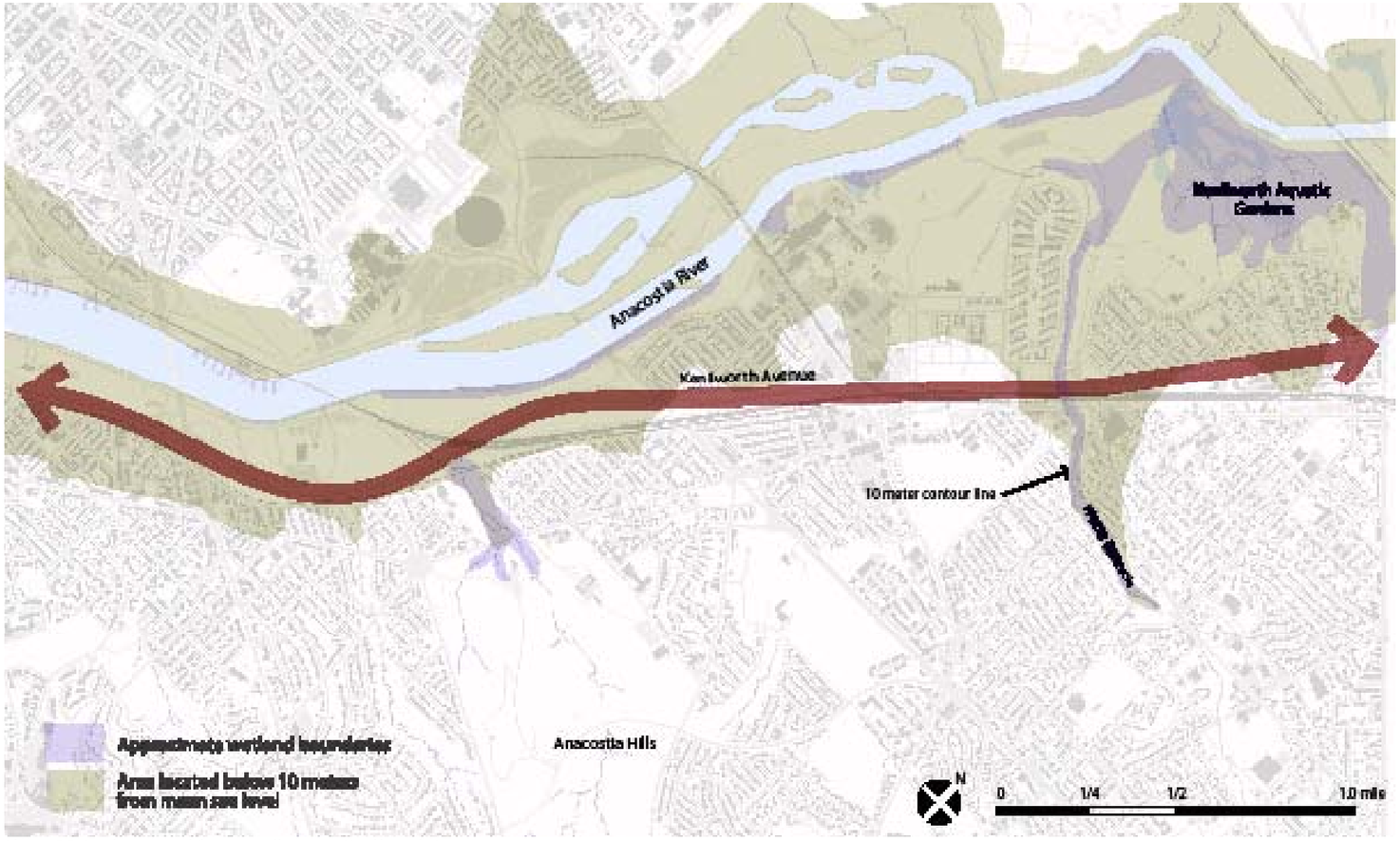

Figure 2.2: Environmental features adjacent to Kenilworth Avenue.

Photos 5 and 6: The Anacostia River Watershed includes urbanized areas (such as Kenilworth Avenue and adjacent built areas) and open space.

Wetlands
The DC Department of Health has identified 13 wetland areas within the Kenilworth Avenue Corridor. Most of these areas are concentrated along the eastern banks of the Anacostia River, and include the Kenilworth Aquatic Gardens and Beaverdam Creek. Several wetland areas are also located along the Watts Branch within Watts Branch Park, and within Fort Dupont Park (see Figure 2.2).

Topography
Kenilworth Avenue is located within the Anacostia River valley between the river and the Anacostia Hills. To the east, the neighborhoods slope up from the corridor, while to the west, the land generally falls away towards the river. This difference in elevation helps to provide a sense of orientation along the corridor and contributes to a scenic quality that offers views of the Anacostia Hills, the Anacostia River, and portions of Washington, DC to the west of the river.

2.2.2 Land Use

There are 12 adjacent neighborhoods served by Kenilworth Avenue. These neighborhoods consist primarily of low-density residences.

Other uses include neighborhood-serving retail and a regional commercial center located at the intersection of Benning Road and Minnesota Avenue. A PEPCO plant is one notable industrial use within the study area.

Open space, consisting of District and Federal parks, is a dominant land use adjacent to the Kenilworth Avenue Corridor.

The area has a predominantly African-American population, and is generally economically mixed.

The area has seen development since pre-colonial times and includes several properties listed on the National Register of Historic Places.

Planning policies, including the Comprehensive Plan and District Zoning, foresee the study area land uses to predominantly remain similar to existing conditions. The significant land use changes anticipated would be higher-density nodes adjacent to the two Metrorail Stations: Minnesota Avenue and Deanwood. Therefore, no substantial changes to the traffic volumes are anticipated from the adjacent neighborhoods.

Figure 2.3: Generalized Land Use within the Study Area (Source: DCOP)

Neighborhoods

Sources used to identify the neighborhood characteristic within the study area include the District of Columbia Existing and Generalized Land Use Maps (Office of Planning, 2005), 1998 and 1999 Comprehensive Plan Update, District of Columbia Strategic Neighborhood Action Plans (DC Office of Planning, 2003), and *A Vision for Growing an Inclusive City* – A Framework Plan for the Washington, DC Comprehensive Plan (Office of Planning 2004). In addition, site visits to the various neighborhoods were conducted to better understand neighborhood characteristics.

The study area includes 12 neighborhoods. Eleven of these neighborhoods are located in Ward 7 (Dupont Park, Twinning, Greenway, Fort Dupont, River Terrace, Benning, Central Northeast, Mayfair, Eastland Garden and Deanwood). The remaining neighborhood, Hill East, is in Ward 6 (see Figure 2.3). These neighborhoods are covered under six neighborhood clusters as identified by the Office of Planning.

These neighborhoods predominantly consist of low-density residential uses including single- and multi-family homes (see Photo 7). The Kenilworth Avenue roadway is generally separated from the adjacent neighborhoods by either the CSX Railroad tracks, Metrorail tracks, or service roads that run adjacent to the mainline.

Commercial and Industrial uses

The area includes neighborhood-serving commercial uses and one regional commercial center. Retail uses are spread throughout the area. The regional commercial center is located at the intersection of Benning Road and Minnesota Avenue. The one notable

Cluster	Low/Moderate Density Residential	Commercial	Commercial/ Light Manufacturing	Industrial	Federal
Cluster 26 (Includes Hill East)	70%	9%	5%	-	16%
Cluster 29 (Includes Eastland Gardens and Kenilworth)	33%	-	-	-	67%
Cluster 30 (Includes Mayfair and Central Northeast)	40%	10%	13%	4%	33%
Cluster 31 (Includes Deanwood)	88%	5%	7%	-	-
Cluster 32 (Includes Benning, Fort Dupont, Greenway and River Terrace)	43%	4%	5%	-	48%
Cluster 34 (Includes Dupont Park, Fairlawn, Fort Davis, Pope Branch, Randle Highlands, Twining)	67%	4%	1%	-	28%

the study area (Source: DCOP 2005).

Photo 7: Single-family residences within the study area

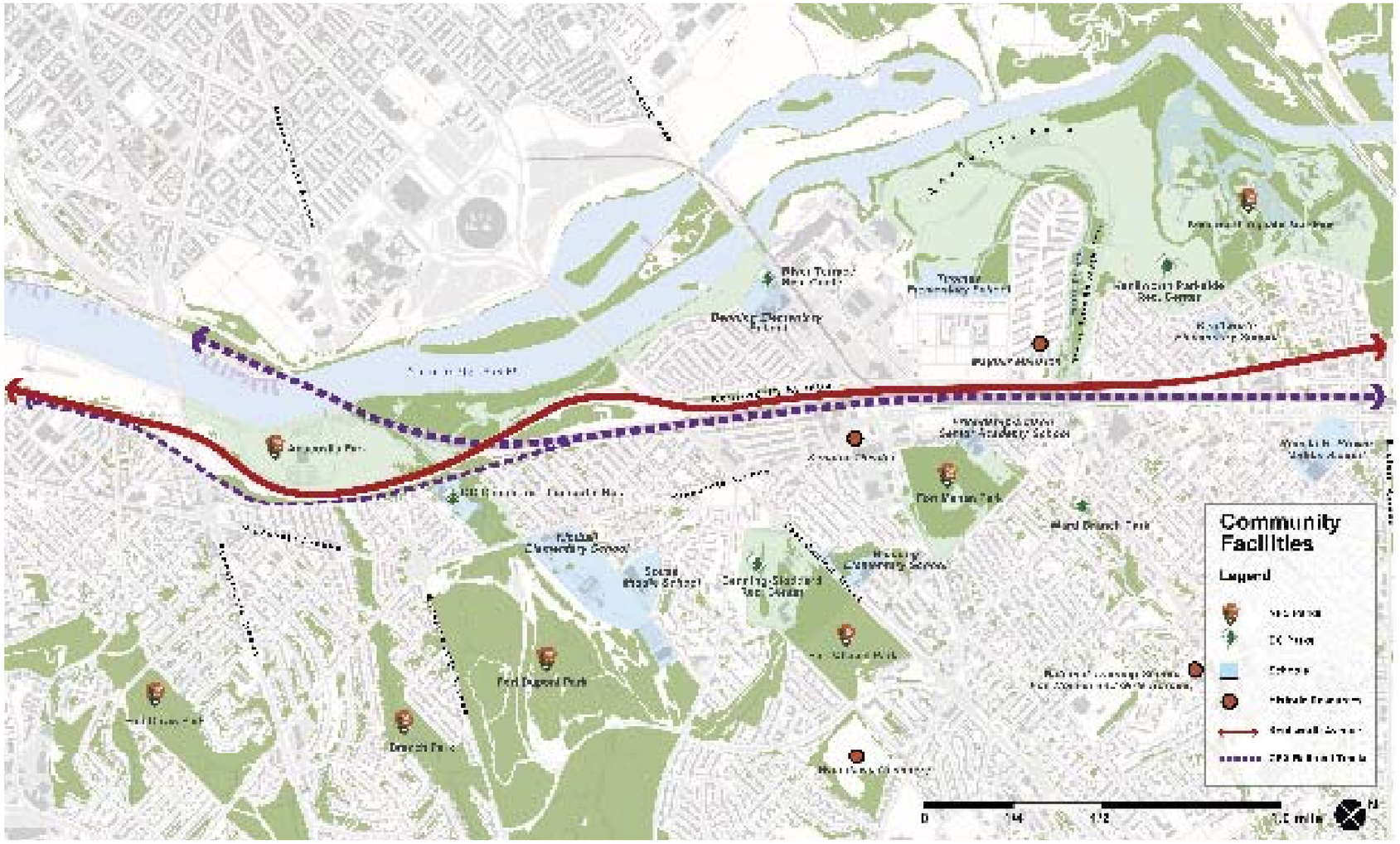

Figure 2.4: Community Amenities and Attractions

industrial use within the study area is the PEPCO plant located northwest of the intersection of Kenilworth Avenue and Benning Road. A solid waste transfer station is located to the west of the PEPCO plant.

Transportation Facilities

In addition to Kenilworth Avenue, the dominant transportation land uses within the corridor are the CSX Railroad and Metrorail corridor. The CSX main line track alignment originates to the west of the study area. It crosses the Anacostia River north of Pennsylvania Avenue, traverses Anacostia Park and passes beneath Kenilworth Avenue just south of East Capitol Street at the Benning Road Switching Yard. At that point, it turns northward and is aligned between Kenilworth Avenue to the west and the Minnesota and Deanwood Metrorail Stations to the east. A branch line, that originates at the Benning Road Switching Yard, runs southwards to the east of and parallel to Kenilworth Avenue.

Community Amenities Including Open Space

Neighborhood residents and visitors from the larger region have access to a number of community resources within the study area, including recreational resources such as parks, trails, recreation centers, and schools. These resources are located on either side of Kenilworth Avenue within the study area (Figure 2.4).

Open space is a significant land use in the study area. Among the 11 parks within the study area, six are Federally controlled (under the administration of the National Park Service) and the remaining are District properties. Parks such as Anacostia Park (including Kenilworth Aquatic Gardens) and Dupont Park are regional draws and attract visitors from adjacent neighborhoods as well as from the District, the region, and beyond. The Anacostia Park provides continuous open space along this segment of the Anacostia River. On the higher elevations of the Anacostia Hills, several Fort Circle parks, as well as District parks, provide a ribbon of linked open spaces.

Recreation centers, such as the River Terrace Recreation Center and the Benning-Stoddard Recreation Center, and schools, such as the Kenilworth Elementary School, primarily draw residents from the adjacent neighborhoods.

Connections between riverside and hillside open spaces are limited. For example, an urban stream, the Watts Branch, flows from the Anacostia Hills to the river and extends a 'green finger' across Kenilworth Avenue. The Watts Branch is a tributary of the Anacostia River and extends to the northeastern boundary of the District and beyond. Within the District, the stream is accompanied by a 1.5 mile trail within the Marvin Gaye Park. After years of neglect, the park is undergoing improvements aimed to re-establish it as an amenity for adjacent neighborhoods.

Several smaller streams to the east of Kenilworth Avenue and the CSX Railroad tracks have been channelized through culverts that discharge directly to the Anacostia River.

A proposed trail system, the Anacostia Riverwalk is proposed to improve connectivity to the various parks along the river.

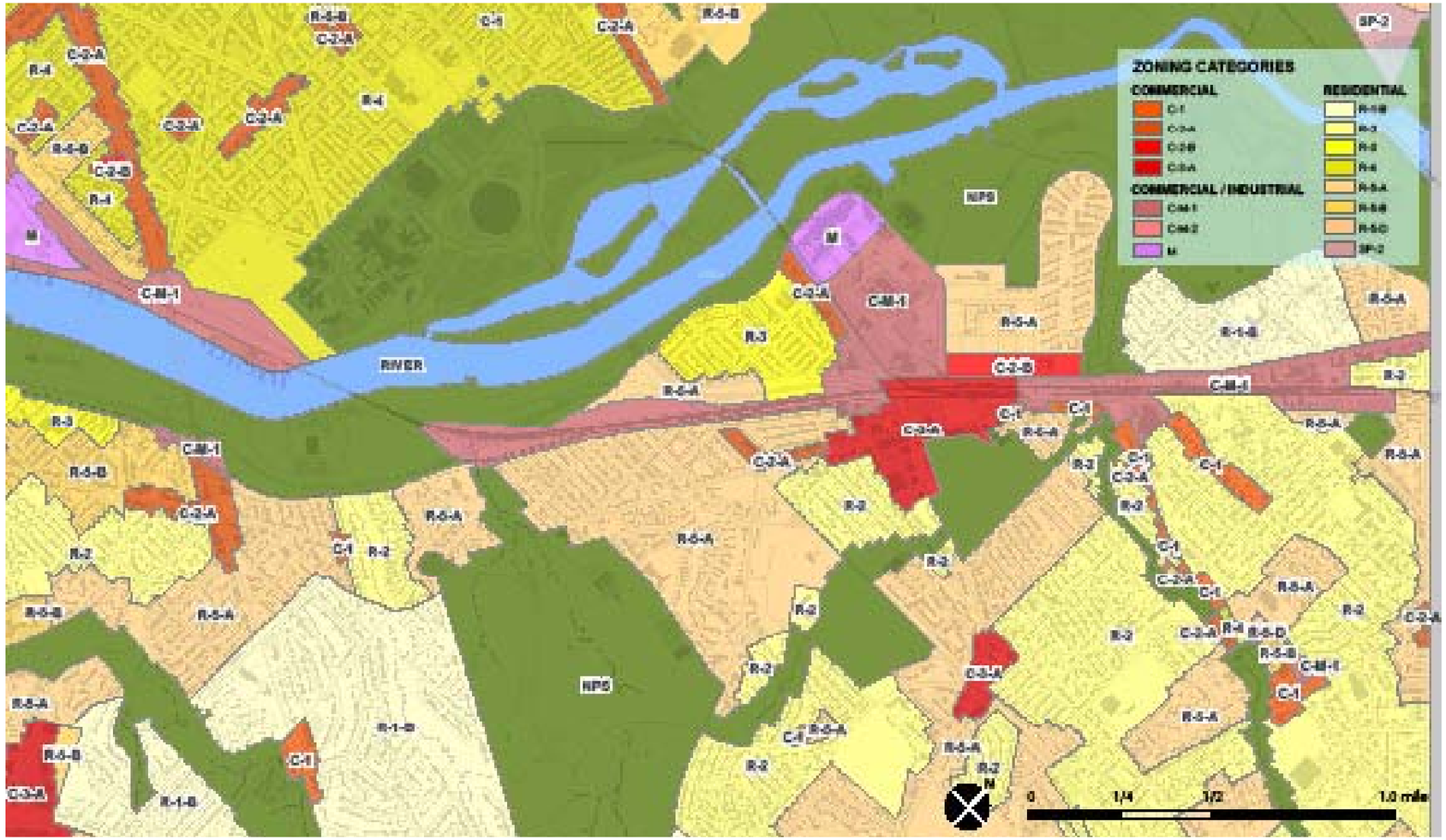

Figure 2.5: Existing Zoning

Comprehensive Plan

The Comprehensive Plan for the District was updated in 1998 and 1999 and is in the process of being updated again. An interim document that provides direction for the comprehensive plan amendments called, *A Vision for Growing an Inclusive City,* was recently developed by the District. Both the existing Comprehensive Plan and the Vision plan indicate that land uses along the Kenilworth Avenue will remain largely similar to the current uses as described above, with a few exceptions.

Consistent with the recommendations of the Vision plan, a new high-density node is currently under development near the Minnesota Avenue Metrorail Station. This node includes a new government center that will house the headquarters of the DC Department of Employment Services, which is currently under construction to the south of the station. Another development (called Parkside), that would include a mix of high-density offices and residences, is proposed in the Mayfair neighborhood across Kenilworth Avenue from the station.

Finally, the Vision plan recommends the area around the Deanwood Metro Station be redeveloped as a high-density transit-oriented neighborhood.

Zoning

Several zoning districts encompass the area adjacent to Kenilworth Avenue (see Figure 2.5). These include four residential zones (R-5-A, R-1-B, R-2, and R-3) and four commercial zones (C-M-1, C-3-A, C-2-B, and C-2-A). In addition, several large tracts of land are under Federal ownership and are not subject to Washington, DC's zoning regulations.

Each of the residential zones permits low-density housing, including single-family detached, semi-detached, rowhouses, flats and apartments with a maximum height of three stories (forty feet).

The commercial zones permit a variety of density and uses. The C-M-1 zone located in several areas along the corridor, including the Deanwood Metrorail Station, and the PEPCO plant, allows medium density bulk commercial and light manufacturing uses restricted to 40 feet in height.

The C-2-A zone, located along the intersection of Minnesota Avenue and East Capitol Street and portion f Benning Road, allows low-density retail, office and residential, up to the height of 50 feet. The C-3-A zone, concentrated near the intersection of Benning Road and Minnesota Avenue, allows a higher density and permits retail, office and residential uses up to a maximum height of 65 feet. The C-2-B zone, located adjacent to Kenilworth Avenue in the Mayfair neighborhood, allows medium-density development, including office, retail, housing, and mixed use up to a maximum height of 65 feet.

Generally, current land uses are consistent with the existing zoning within the study area.

Socioeconomic Profile Within the Clusters

The study area overlaps with six neighborhood clusters adjacent to Kenilworth Avenue (as shown in Figure 2.3 and Table 2.2). With the exception of Cluster 26, all of these clusters have a predominantly African-American population.

The study area is economically mixed. Median incomes in Cluster 26 and 29, which include Hill East, Eastland Gardens, and Kenilworth, are significantly higher compared to the entire city, whereas the median income in Clusters 30, 31, and 32, (Mayfair, Central Northeast, Deanwood, Benning, Fort Dupont, Greenway, and River Terrace) is significantly lower. Median income in Cluster 34 is comparable to the city as a whole.

	Population	% of District Population	Race (%)	Median Household Income	Owner Occupied Housing
District	572,059	100	African American = 60% White = 31% Hispanic* = 6%	$43,001	41%
Cluster 26 (Includes Hill East)	18,479	3.2	African American = 46% White = 49% Hispanic* = 3%	$67,835	51.5%
Cluster 29 (Includes Eastland Gardens and Kenilworth)	2,343	0.4	African American = 98% White = 0% Hispanic = 0%	$58,409	44%
Cluster 30 (Includes Mayfair and Central Northeast)	6,114	1.1	African American = 99% White = 1% Hispanic = 0%	$24,022	44%
Cluster 31 (Includes Deanwood)	14,113	2.5	African American = 98% White = 1% Hispanic = 1%	$28,729	46%
Cluster 32 (Includes Benning, Fort Dupont, Greenway and River Terrace)	12,319	2.2	African American = 97% White = 2% Hispanic = 0%	$33,771	32%
Cluster 34 (Includes Dupont Park, Fairlawn, Fort Davis, Penn Branch, Randle Highlands, Twining)	14,567	2.5	African American = 96% White = 2% Hispanic = 1%	$42,493	49%

Table 2.2: Socioeconomic profile of neighborhood Clusters that include the study area (Source: DCOP 2003).

The percentage of owner-occupied housing in Clusters 29 and 30 is in line with overall rates in Washington, DC. In Cluster 32, the percentage is significantly lower, while in Clusters 26, 31 and 34, it is greater.

Historic Features

A goal of the Anacostia Waterfront Transportation Architecture Design Standards is to emphasize the history and uniqueness of the Anacostia watershed area by implementing customized design standards within designated Special Areas, including the Kenilworth Avenue Corridor, and integrating public art in public works projects. The study area encompasses several historically significant resources that lend themselves to interpretation through customized signs and public art.

The earliest known residents along the Anacostia River were the Nacotchtank Indians. Their agricultural economy focused on flatlands along the Anacostia and Potomac Rivers. Subsequently, the area became a part of Maryland's Prince Georges County under a 1632 land grant from King Charles I to George Calvert, the first Lord Baltimore. The area, which was mainly rural, saw increasing development in the late 1800s, which accelerated in the early 1940s with the onset of World War II.

Three historic forts located within the study area were part of the defenses that surrounded Washington, DC during the Civil War. The fort system was built between 1861 and 1865 when Washington, DC functioned as a training ground, arsenal, supply depot, and center for the Union cause. The three forts (within the study area), Fort Mahan, Fort Chaplin and Fort Dupont, currently serve as public parks (see Figure 2.4). These sites are listed on the National Register of Historic Places as well as on the DC Inventory of Historic Sites.

Following the Civil War, freed African-Americans began to move into the area and established DePriest Village (Capital View), Burrville, Bloomingdale, and Lincoln. Deanwood began as a conglomeration of three subdivisions: Whittingham, Lincoln (today known as Lincoln Heights), and Burrville.

By 1910, Deanwood had been developed into a stable neighborhood of blue- and white-collar African-American families in the building trades. They collaborated to increase employment with a focus on design, construction, and repair of houses. Deanwood's African-American community was also large enough to establish its own public school system beginning with Deanwood Elementary School and the National Training School for Women and Girls; the latter founded by Nannie Helen Burroughs in 1909. The National Training School offered academic classes, religious instruction, and training in domestic arts and vocations to young black women and girls. The original school building was replaced in 1926. The property, which today serves as the headquarters of the Progressive National Baptist Convention, and is listed on the National Register of Historic Places (see Figure 2.4).

Due to its distance from the city center, Deanwood remained a semi-rural area until after World War II. It was not until the 1950s that the city government provided vital infrastructure such as paved streets, sewers, and minimal sidewalks.

Benning Heights grew slowly (from 25 structures in 1927 to 50 in 1936) prior to the 1940s, after which it blossomed as a direct result of new government jobs created by World War II. Despite opposition, a low-income housing complex was built in the early 1940s at Ridge Road. Development continued in the form of single–family detached units in Garden Greenway, Central NE areas, and the Benning Road area.

DESIGNATED HISTORIC SITES WITHIN THE STUDY AREA

In addition to the sites already identified, the study area includes several properties that are listed on the National Register of Historic Places. These include Woodlawn Cemetery, a non-denominational, integrated burial ground established in 1895. It contains monuments to many notable African-Americans and re-interments from earlier cemeteries dating from 1798. The cemetery was listed on the DC Inventory of Historic Sites in 1991 and on the National Register of Historic Places in 1996.

Also listed on the National Register and the DC Inventory is the Mayfair Mansion Apartments, one of the city's earliest garden apartment complexes. The 500-unit apartment complex was constructed between 1942 and 1946 and reflected an early effort to provide a first class affordable housing complex for the District's African-American residents during an era of strict segregation and discrimination in the housing industry. As stated in the National Register Listing, "Mayfair Mansions was the first housing development for African-Americans that met Federal Housing Administration (FHA) construction standards and insurance underwriting criteria."

Howard University Professor of Architecture Albert I. Cassell purchased the former Benning Race Track in 1942 in order to build the colonial style project he conceived of and designed. It was listed on the DC Inventory of Historic Sites and the National Register of Historic Places in 1989.

The entrance pavilion of the Senator Theater, located on Minnesota Avenue and designed by noted theater architect John Jacob Zink, is listed on the DC Inventory of Historic Sites.

Listed on the National Register and the DC Inventory, the Kenilworth Aquatic Gardens, formerly known as the Shaw Lily Gardens, occupy 14 acres within the 1,200-acre Anacostia Park. The gardens have been under the management of the National Park Service since their transfer to public ownership in 1938.

2.3 Urban Design

The Kenilworth Avenue Corridor has an inconsistent edge within the study area that varies from an open and green setting south of East Capitol Street to a more urban character to the north.

Elements that can contribute to creating a parkway include the following:

- the variety of adjacent land uses, including buildings, rail corridors, and open space;
- the landscape treatment within the corridor, including lighting, signage, and planting;
- the amount of paved surface areas of the roadway, shoulders, and service lanes; and
- the architectural treatment of bridges, walls, and railings.

These are discussed in detail below.

2.3.1 Visual Experience of Motorists

Urban Character

Motorists traveling along Kenilworth Avenue experience a corridor that has a varied urban character and inconsistent land use edge. From a more open and green setting between Pennsylvania Avenue and East Capitol Street, the corridor transitions into a more urban character from East Capitol Street to Eastern Avenue (see Figure 2.6).

The urban character in the northern portion is further emphasized by the number of overhead structures that traverse Kenilworth Avenue. Between Benning Road and Eastern Avenue, a 1.5 mile-long segment, motorists pass under two vehicular bridges, two rail bridges, and four pedestrian bridges. Conversely, there are no overhead structures for the two mile distance between Pennsylvania Avenue and Benning Road (see Figure 2.9).

These overhead structures vary in design, their relationship with the roadway, and condition. Several of these structures are in need of repair or replacement and add to the visual clutter experienced by motorists.

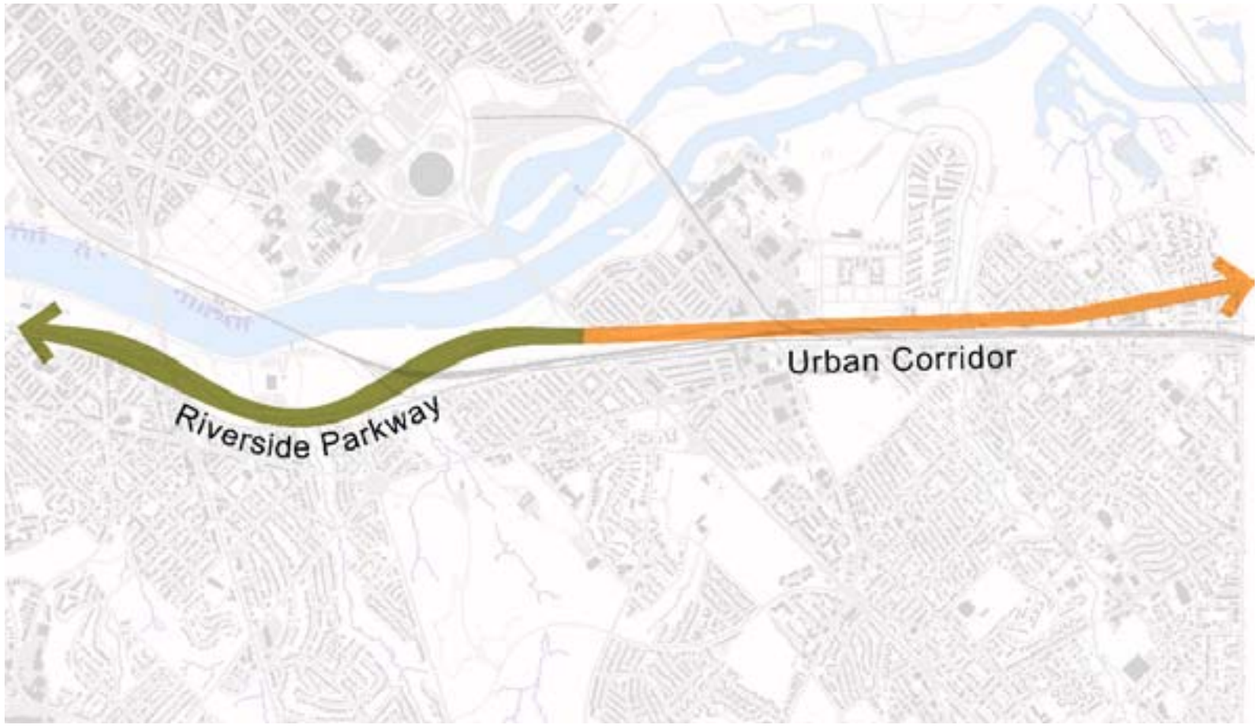

Figure 2.6: From an open and green setting to the south, Kenilworth Avenue transitions into a more urban character to the north of East Capitol Street.

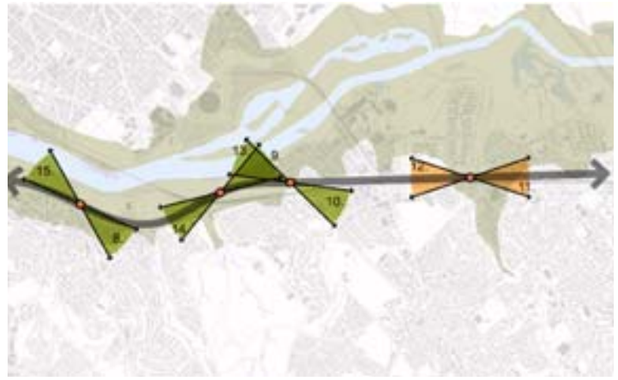

Figure 2.7: Visual character along Kenilworth Avenue (see images below)

Northbound Kenilworth Avenue (Photos 8 to 11)

Southbound Kenilworth Avenue (Photos 12 to 15)

The neighborhoods adjacent to Kenilworth Avenue are mostly organized on an orthogonal grid of east-west and north-south streets (see Figure 2.8). This grid is consistent with the typical street pattern found throughout Washington, DC. The alignment of Kenilworth Avenue and the adjacent railroad corridors preceded the neighborhood streets and was based on existing natural resources (see Figure 2.9). The avenue is parallel to the Anacostia River, and is in an alignment that is roughly diagonal to the local street grid.

Landscape Character

Between Pennsylvania Avenue and East Capitol Street, Kenilworth Avenue's open space setting reflects the presence of the adjacent Anacostia Park and landscaped buffers along the CSX Railroad tracks. The avenue is flanked by large wooded areas, interspersed with open lawns used for recreation purposes along the river.

North of East Capitol Street, Kenilworth Avenue is paralleled by service roads with ramps that provide access to and from the avenue. Tapered medians incorporating planting areas are located between the avenue and the ramps. Additional planting areas are located at the outer edge of the ramps.

Existing vegetation includes occasional street trees and deciduous shade trees, as well as overgrown shrubs masses within open lawn areas. The groundcover is typically turf grass. Based on the condition of the planting and the presence of weedy areas, including invasive exotic species such as Tree-of-Heaven *(Ailanthus altissima)*, the current level of landscape maintenance appears to be minimal.

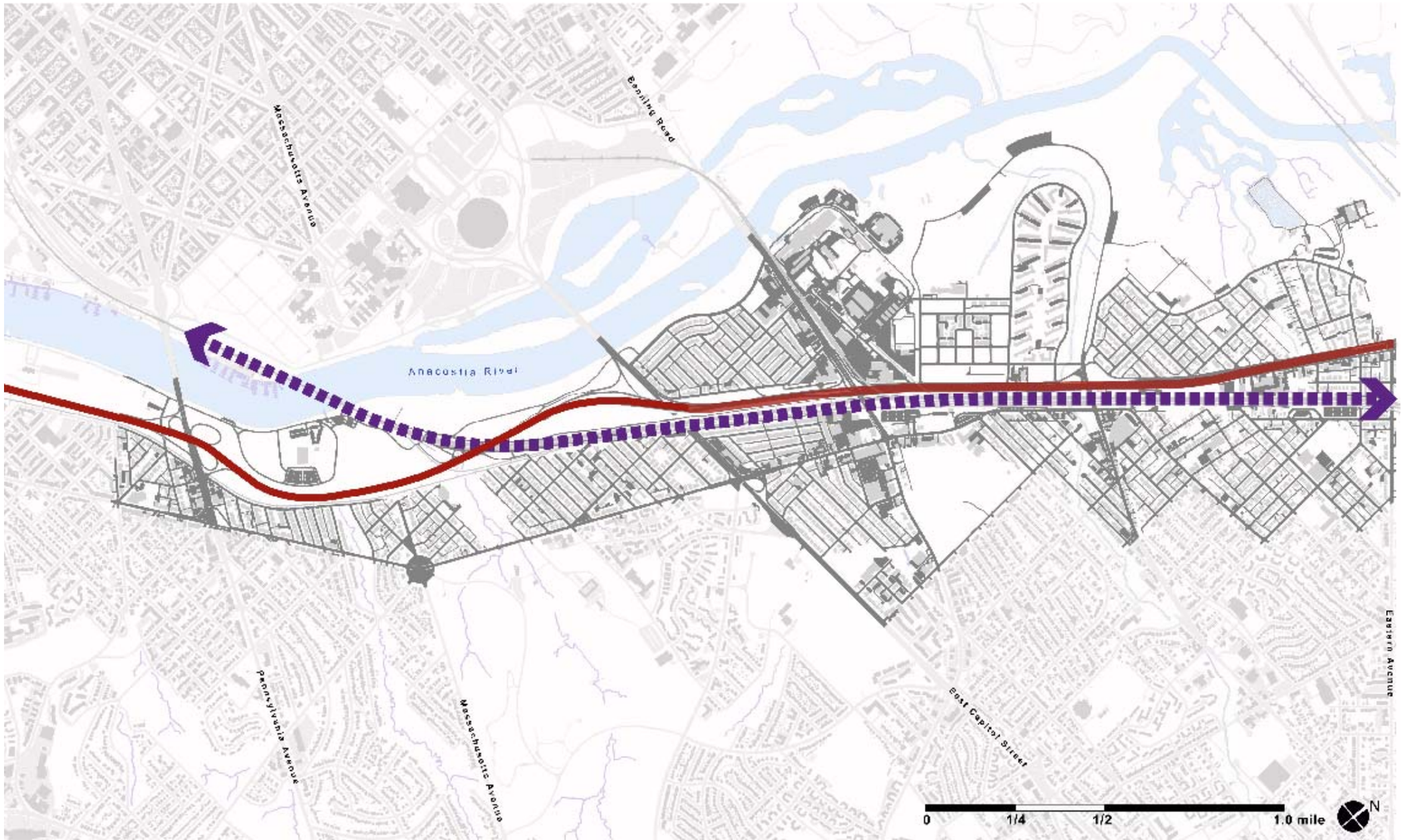

Figure 2.8: Kenilworth Avenue is in an alignment that is diagonal to the adjacent local street pattern.

Figure 2.9: Historic Roadway Alignments in the Area (1822, 1865 and 1885)

2.4 Overview of Pedestrian, Bicycle, and Vehicular Connectivity

Currently there are nine locations along the 3.5-mile long corridor where pedestrians, bicyclists and/or motorists can cross Kenilworth Avenue.

Access to Anacostia Park

Between Pennsylvania Avenue and East Capitol Street, nearly a 1.5-mile stretch, the only access across Kenilworth Avenue is an informal pedestrian underpass that connects the neighborhood of Fort Dupont Park and Twinning with Anacostia Park.

East Capitol Street

East Capitol Street is primarily a vehicular route that passes underneath Kenilworth Avenue and the CSX Railroad tracks (Figure 2.10). To the west, it passes adjacent to the River Terrace neighborhood and across the Anacostia River on the Whitney Young Memorial Bridge to connect to Capitol Hill and Washington, DC's Monumental Core. To the east, it passes through the Greenway, Fort Dupont, and Benning neighborhoods.

Currently, there is no pedestrian access across Kenilworth Avenue along East Capitol Street. East Capitol Street is one of the primary axial streets that extend outwards from the US Capitol Building, as specified by the L'Enfant Plan. The National Capital Planning Commission's Legacy Plan recommends strengthening East Capitol Street as a link between central Washington, DC and communities across the Anacostia River.

Benning Road

Benning Road crosses over Kenilworth Avenue and the CSX Railroad tracks. To the west, the road passes adjacent to the River Terrace neighborhood and extends across the Anacostia River to connect to downtown Washington, DC. To the east, the road intersects with Minnesota Avenue and extends beyond through the Benning and Central Northeast neighborhoods.

At Kenilworth Avenue, the Benning Road bridge provides access for two lanes of traffic in either direction along with a narrow sidewalk for pedestrians and bicyclists on the south side of the bridge.

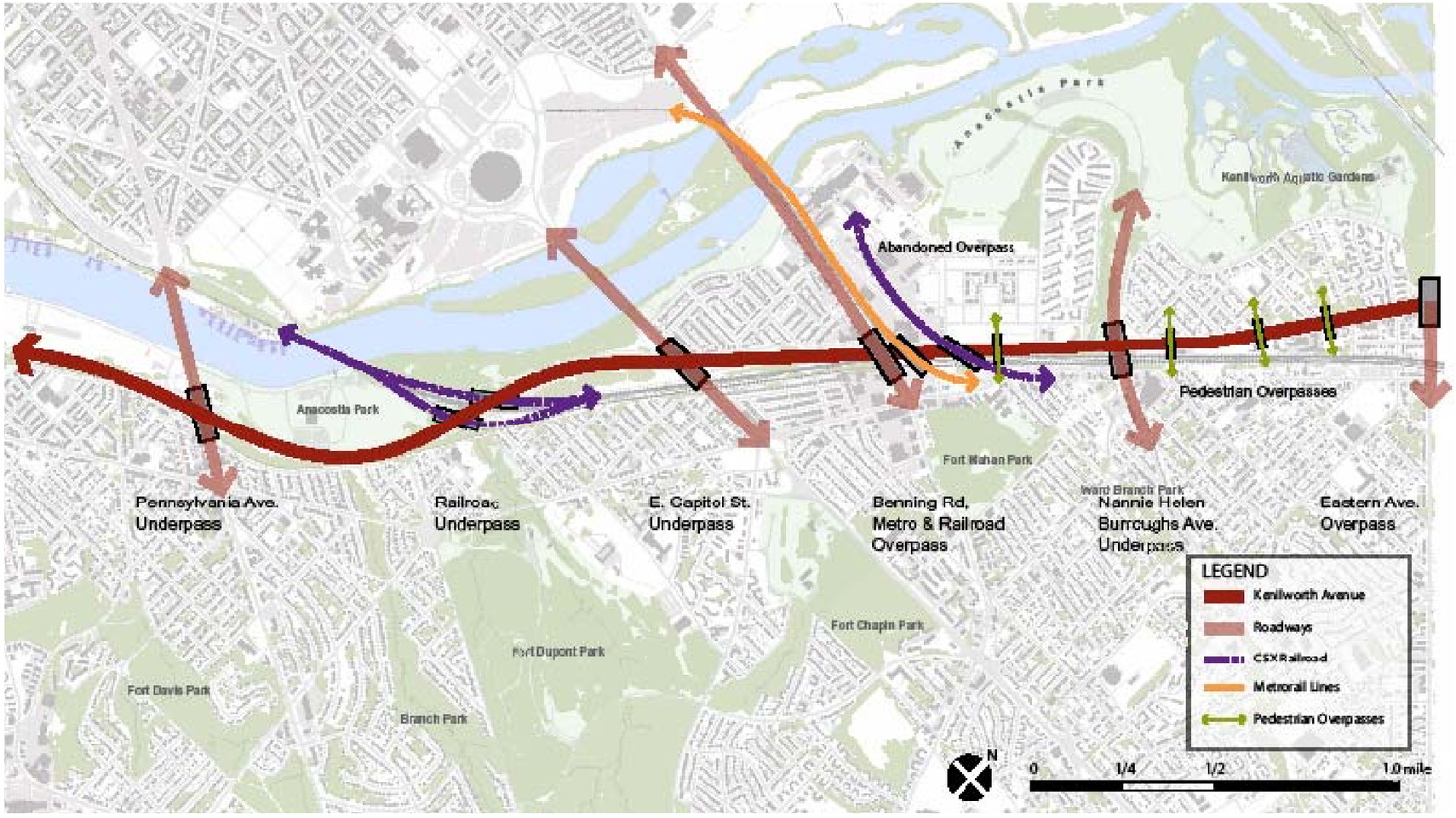

Figure 2.10: Kenilworth Avenue traverses four underpasses and eight overpasses.

Pedestrian Crossings

There are four pedestrian bridges that cross Kenilworth Avenue. These are located between Benning Road and Eastern Avenue. The bridges were built in the 1960s and show signs of wear and tear. In each case, pedestrians pass through a narrow structure that is enclosed by an overarching chain link fence. The bridges are best used during the daytime since there are no lights on the bridge and approaches to allow night use.

Nannie Helen Burroughs Avenue

Nannie Helen Burroughs Avenue passes underneath Kenilworth Avenue and the adjacent CSX Railroad tracks. Access for pedestrians and bicyclists is constrained due to the narrowness of the underpasses. In addition, there is no night lighting or clear demarcation of pedestrian paths at street intersections to encourage walking. This interchange is programmed for improvement and reconstruction in 2007.

Eastern Avenue

Eastern Avenue is a grade-separated crossing that allows pedestrians, bicyclists, and motorists to cross over Kenilworth Avenue. To the west, the street terminates at the Kenilworth Avenue southbound service road. To the east, it extends past the Deanwood neighborhood. The bridge is dominated by the roadway and provides two lanes for traffic in either direction, as well as U-turn lanes at the northern and southern end. There is no vegetation on the bridge and pedestrian paths, while demarcated with ladder crosswalk markings, terminate at median islands or are otherwise difficult to use. The primary limitation of the existing interchange is the poor and unsafe pedestrian environment and lack of landscaping and streetscape features. Pedestrians are forced to cross the corridor on a narrow concrete median that separates the turning

traffic on Eastern Avenue from the Kenilworth Avenue traffic using the U-turns.

2.5 Pedestrian and Bicycle Experience

Walking and bicycling are common forms of travel in the Kenilworth Avenue Corridor. Residents and visitors walk and bicycle for many reasons, including accessing transit, going to work and school, shopping, visiting friends, and exercising.

The fieldwork conducted for this study found that non-motorized trips were made in all of the neighborhoods surrounding Kenilworth Avenue. Particularly high volumes were observed in the commercial area on Minnesota Avenue between Benning Road and East Capitol Street and near the Minnesota Avenue Metrorail Station.

Many pedestrians also cross Kenilworth Avenue, CSX Railroad, and Metrorail lines to access the Minnesota Avenue and Deanwood Metrorail Stations. Bicyclists frequently ride along Benning Road because it is one of the few roads that cross the Anacostia River, CSX Railroad, and Kenilworth Avenue.

2.5.1 Pedestrian and Bicycle Counts

Pedestrian and bicycle counts and intercept surveys were collected during Fall 2004 to help quantify non-motorized travel in the Kenilworth Avenue Corridor. With the exception of a few intersection pedestrian counts taken by DDOT between 1999 and 2003, there was little existing documentation on the overall amount and patterns of non-motorized travel in the Corridor (see Appendix B for more detail).

The information gathered in the fall of 2004 was used to conduct an analysis and suggest recommendations for pedestrian and bicycle improvements at specific locations that have the greatest need for better non-motorized transportation facilities.

Pedestrians and bicyclists were counted manually at five locations in the Kenilworth Avenue Corridor (see Figure 2.11):

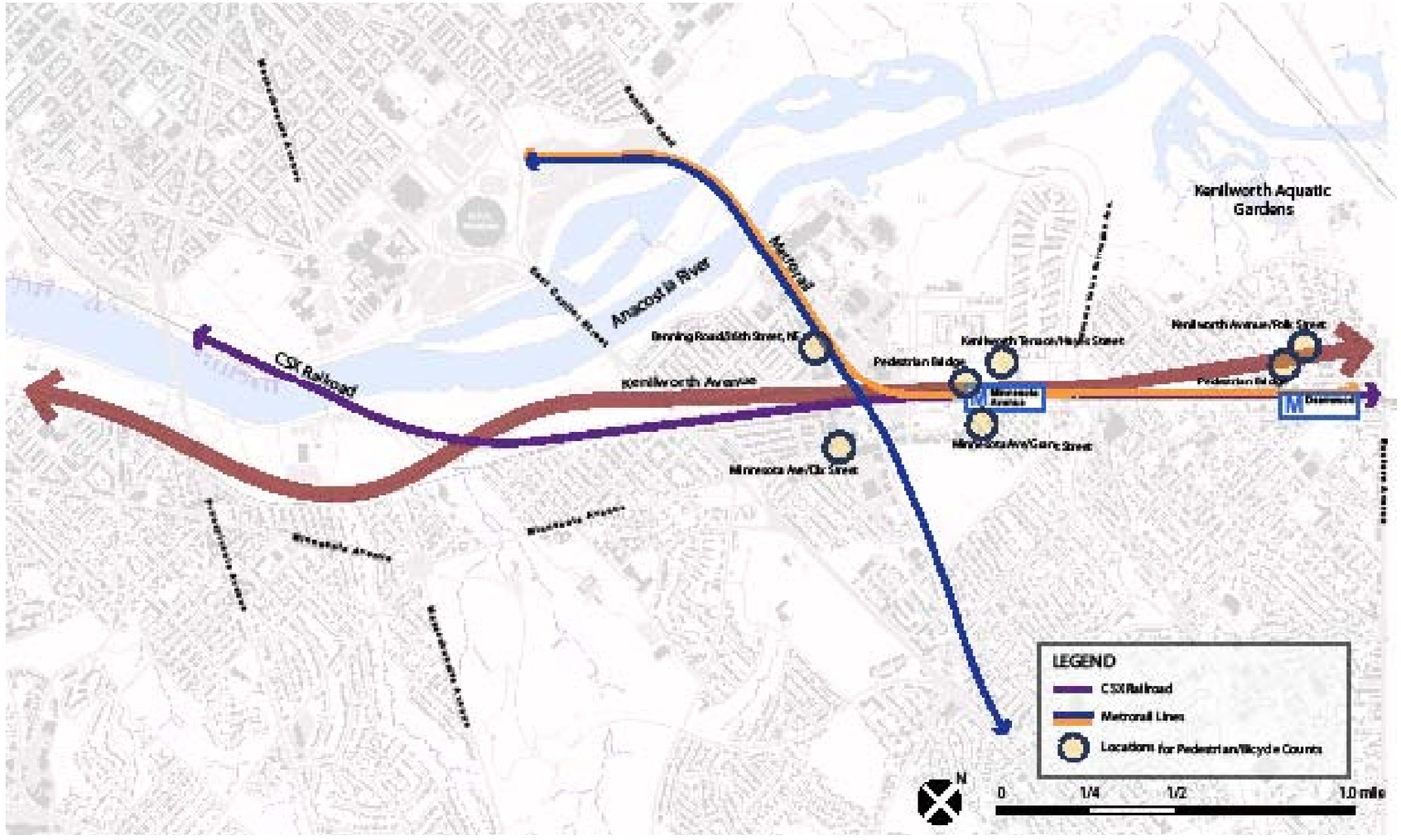

Figure 2.11: Location of Pedestrian and Bicycle Counts Conducted

- Minnesota Avenue and Dix Street, NE;
- Kenilworth Terrace and Hayes Street, NE;
- Minnesota Avenue and Grant Street, NE;
- Benning Road and 36th Street, NE; and
- Kenilworth Avenue and Polk Street, NE.

Counts were taken near two of the four pedestrian bridges over Kenilworth Avenue. Counts were not taken at the remaining two pedestrian bridges, at Lane Place and at Nash Street, because they were observed to have minimal pedestrian activity during the field observation periods.

The data collectors counted a total of 6,675 pedestrians and bicyclists crossing the aforementioned intersections between October 20 and October 29, 2004. Observations were made for a total of 90 hours among the five sites. Considering nearby land uses, there were consistently high pedestrian volumes at all of the count locations.

The greatest flows of pedestrians and bicyclists occurred at the intersection of Minnesota Avenue and Dix Street (92.5 pedestrians/bicyclists per hour, on average). This location is close to a major grocery store, small shoe and clothing stores, several restaurants, and several one- and two-story office buildings.

The next highest pedestrian and bicycle volumes were at the intersections of Minnesota Avenue and Grant Street and at the intersection of Kenilworth Terrace and Hayes Street (see photo 17). Both intersections are located close to the Minnesota Avenue Metrorail Station, the former immediately east and north of the Friendship-Edison Senior Academy School, and the latter west of the station and across Kenilworth Avenue.

Photo 16: Manual counts for pedestrian and bicycle activity were taken with the paid assistance of local Ward 7 residents.

Photo 17: View of Minnesota Avenue at Grant Street; the Minnesota Avenue Metrorail Station is to the right.

Photo 18: Teenagers are the most common group of pedestrians and bicyclists identified in the corridor.

Photo 19: Exit ramps on the west approach to the Benning Road bridge make a safe crossing for pedestrians difficult.

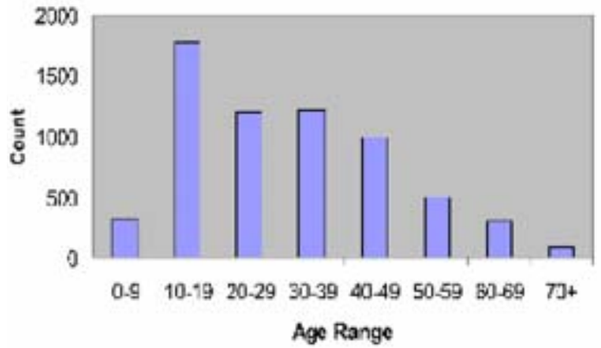

Table 2.3 Distribution by age of pedestrians and bicyclists surveyed

Photo 20: People of all abilities use the corridor.

Photo 21: Benning Road bridge presents a narrow sidewalk and an unwelcome experience for pedestrians and bicyclists.

Pedestrians and bicyclists can reach the station by crossing a pedestrian bridge over Kenilworth Avenue.

The Benning Road location is near a bus stop and several retail establishments. To reach this location, the 111 people counted at this site needed to cross the on- and off-access ramps to Kenilworth Avenue. This count is particularly high, given the uncomfortable pedestrian and bicycle conditions at this crossing due to the fast-moving traffic accessing Kenilworth Avenue. In spite of this, pedestrians and bicyclists must rely on the Benning Road bridge as it is the only connection across Kenilworth Avenue for the one-mile section between East Capitol Street and the pedestrian bridge at Hayes Street.

The intersection of Kenilworth Avenue and Polk Street is located at the east side of a pedestrian bridge that connects the Eastland Gardens neighborhood with the Deanwood Metrorail Station. Nearly all of the pedestrians and bicyclists at this location crossed the north and east sides of the intersection because they were traveling between the Deanwood Metrorail Station and the pedestrian bridge.

Peak-Hour Pedestrian and Bicycle Observations

It was observed that locations with the highest peak-hour counts corresponded generally with the locations with the highest overall pedestrian and bicycle flows. However, even in locations with fewer pedestrians, such as Kenilworth Avenue and Polk Street, approximately one pedestrian crossed the intersection per minute during weekday peak periods.

The highest numbers of pedestrians and bicyclists were observed between 8:00 AM and 9:00 AM at Minnesota Avenue and Grant Street, where many groups of students cross near the intersection on their way to school. It is also likely that students who are walking and biking after school helped bring counts to their highest levels between 3:00 PM and 4:00 PM at Minnesota Avenue and Dix Street and Kenilworth Avenue and Polk Street.

Fewer pedestrians and bicyclists were observed at Minnesota Avenue and Dix Street and Kenilworth Terrace and Hayes Street on Saturday than on the weekdays, but there were still between one and two people per minute crossing these intersections during the peak hour. Pedestrian and bicycle activity was highest during the last Saturday count period at the Minnesota Avenue and Dix Street and Benning Road and 36th Street intersections.

Age

People of all ages were observed walking and bicycling in the Kenilworth Avenue Corridor. Approximately 5% of the people crossing these streets were estimated to be under age 10 and approximately 6% were age 60 or older.

Though all ages were represented, teenagers (ages 10-19) were the most common group of pedestrians and bicyclists. This age group was especially common near the intersections of Kenilworth Terrace and Hayes Street and Kenilworth Avenue and Polk Street. Both of these intersections are on routes commonly used by students to go to and from school. Extra consideration should be given to pedestrian facilities and traffic calming near these intersections to provide these students with safe routes to school.

Packages and Assistive Devices

Nearly half (45%) of all pedestrians and bicyclists observed were carrying packages (backpacks, briefcases, groceries, bags of merchandise, etc.). Many of these people were school children, shoppers, and workers. This observation suggests that people who travel in the corridor are not only walking for exercise or to social activities, but that they rely on non-motorized transportation for their daily business activities and errands.

During the data collection periods, 115 people (approximately 2% of pedestrians) were noted as using a wheelchair, walker, cane, or other assistive device (see Photo 20). These observations show that pedestrians with disabilities are a component of the pedestrian traffic in the Kenilworth Avenue Corridor.

Bicyclists

Bicyclists were observed in different parts of the Kenilworth Avenue Corridor, but were especially common at the intersection of Benning Road and 36th Street, where they represented 18% of the non-motorized traffic. This location was observed on a Saturday, which is a common day for recreational bike rides. The high count numbers show that Benning Road is a common route used by bicyclists to cross the Anacostia River, Kenilworth Avenue, and the CSX railroad tracks.

Bicyclists use this route despite the following conditions:

- high traffic volumes on Benning Road between 34th and 36th Streets;
- the need to cross on and off ramps to and from Kenilworth Avenue;
- narrow sidewalks and traffic lanes on the bridge; and
- large numbers of turning vehicles and multiple lanes at the intersection of Benning Road and Minnesota Avenue.

It is likely that bicycle volumes would increase in this corridor if conditions were more suitable for bicycling. Heavy traffic and large numbers of vehicles turning into side streets and driveways may also be keeping more bicyclists from using Minnesota Avenue. In order to improve conditions, bicycles should be given better separation from vehicles on the road and conflicts with turning vehicles should be reduced through intersection improvements. This will make it possible for more people to bicycle to reach key destinations on this roadway, such as Fort Dupont

Park, the Watts Branch Trail, the businesses and offices near Dix Street, and the Minnesota Avenue and Deanwood Metrorail Stations.

2.6 Existing Infrastructure and Traffic Conditions

2.6.1 Functional Classification and Importance

Kenilworth Avenue is classified as a freeway or expressway. Within the study area, it is a 3.5-mile long limited-access highway with entry to and from the main route generally restricted to five main interchanges.

South of Pennsylvania Avenue, Kenilworth Avenue becomes the Anacostia Freeway.

The five main interchanges that access Kenilworth Avenue within the study area are located at the following arterials:

- Pennsylvania Avenue
- East Capitol Street
- Benning Road
- Nannie Helen Burroughs Avenue
- Eastern Avenue

Anacostia Freeway extends southwards to the 11th Street Bridge and I-295. To the north, Kenilworth Avenue connects to the Baltimore-Washington Parkway and US. Route 50, both of which are limited access highways. Access to northbound Kenilworth Avenue in Maryland (MD 201) is also provided.

Together with the Anacostia Freeway, Kenilworth Avenue is known as DC 295 and is the only numbered route within the District of Columbia that is not an Interstate Highway or a US Highway. It is part of the National Highway System (NHS), a system of highways throughout the United States considered important to the nations' economy, defense and mobility. This highway is also a designated E-Route, one of twenty-five corridors radiating from downtown Washington, DC that serve as emergency event/evacuation routes.

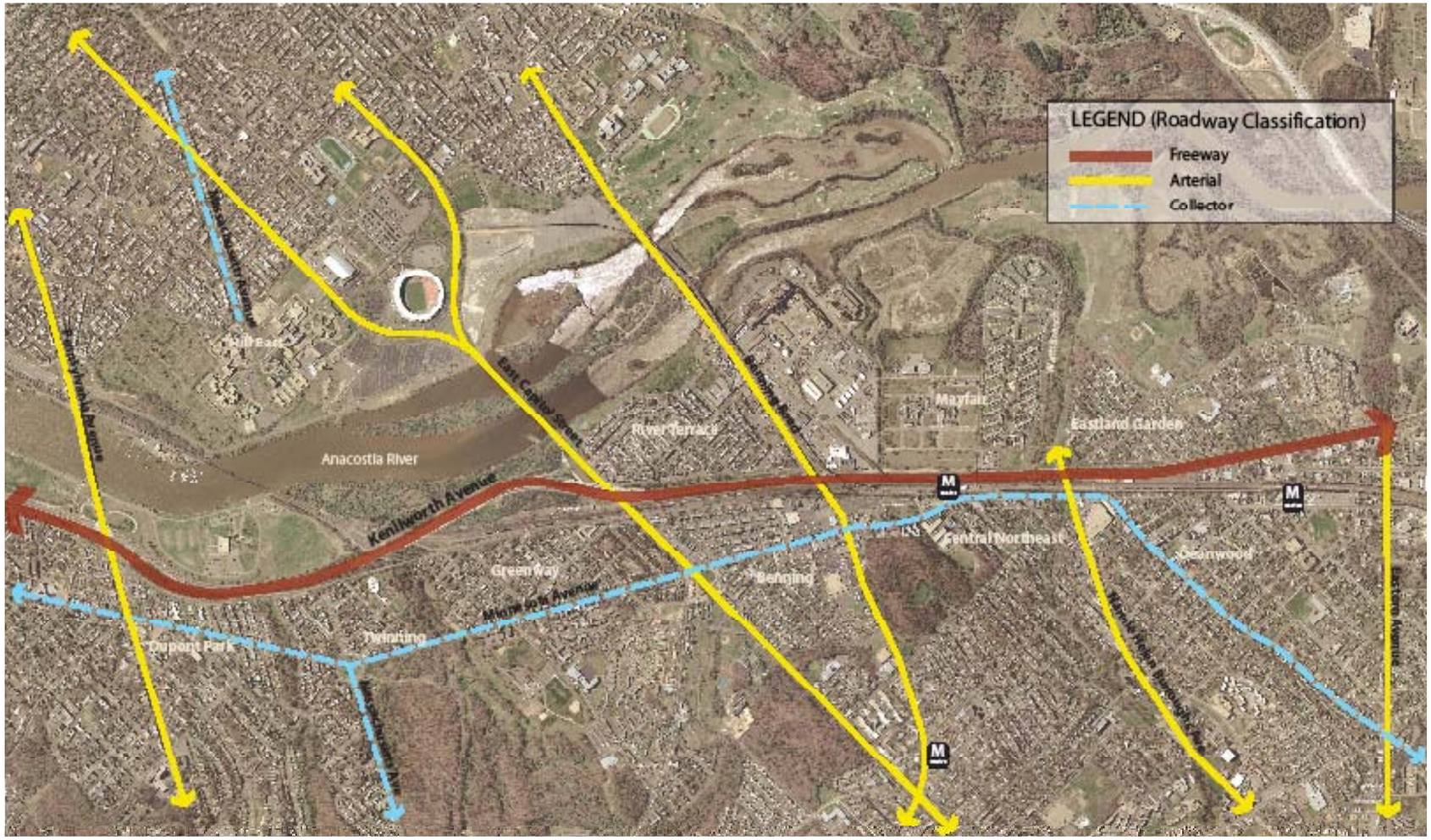

Figure 2.12: Roadway Classification

Throughout the study area, the posted speed limit is 45 mph. On the north end, the speed limit on the Baltimore-Washington Parkway is also 45 mph. On the south end, the Anacostia Freeway is posted for a speed limit of 50 mph.

Of the other major roads in the Study Area, Pennsylvania Avenue, East Capitol Street, and Benning Road are classified as Principal Arterials; Nannie Helen Burroughs Avenue, Eastern Avenue and Minnesota Avenue are classified as Minor Arterials. Massachusetts Avenue west of the proposed Reservation

13 development and east of Randle Circle is classified as a Collector.

Figure 2.12 shows the complete roadway network and corresponding functional classifications.

2.6.2 Description of Infrastructure

Within the study area, the roadway pavement conditions vary. Between Pennsylvania Avenue and East Capitol Street, motorists drive through a two-lane roadway with a paved shoulder and a wide median. North of East Capitol Street, motorists drive through a three-lane roadway, with a narrow median and limited or no shoulders. Parallel service roads north of East Capitol Street provide access to adjacent neighborhoods.

Within the study area, the roadway pavement conditions vary, affecting the motorists' visual and driving experience along the corridor.

Between Pennsylvania Avenue and East Capitol Street, motorists drive through a two-lane roadway, with a paved shoulder, and a wide median that separates traffic and reduces the amount of pavement visible to motorists. It is an open highway section with 12-foot travel lanes, a 4-foot left shoulder, and a 10-foot right shoulder. Northbound and southbound traffic are separated by a concrete barrier (see Photo 22). To the driver's right, beyond the shoulder, is typically a grass area protected by a steel rail barrier.

As the driver approaches the East Capitol Street interchange, however, there are locations with wide shoulders and excess pavement (see Photo 23). This additional pavement area was originally constructed to accommodate a future ramp from the Barney Circle Freeway and is no longer needed.

North of East Capitol Street, motorists drive through a three-lane roadway, with a narrow median. In addition, service lanes, merge areas, and breakdown lanes are located along one or either side of the corridor.

In this section, the roadway narrows into a closed roadway with concrete curb and gutter and 11-foot travel lanes. There are limited or no shoulders, and numerous slip ramps in sections where there are parallel service roads. There is also a concrete barrier median with fencing along the top to discourage pedestrian crossings (see Photo 24).

Photo 22: Typical cross-section of Kenilworth Avenue between Pennsylvania Avenue and East Capitol Street

Photo 23: Wide shoulder pavement near East Capitol Street originally built for additional roadway connections; those plans have long since been abandoned

Beginning at	Ending at	Right-of-Way Width	Number of Travel Lanes	Shoulders	Median Treatment
Pennsylvania Avenue	East Capitol Street	120 feet	4	4' left; 10' right	Barrier
E. Capitol Street	Benning Road	150 feet	6		Barrier
Benning Road	NHB Avenue	160 feet	6	None	Barrier
NHB Avenue	Eastern Avenue	190 feet	6	None	Barrier
Eastern Avenue	Maryland State Line	190 feet	7	None	Barrier

Table 2.4: Kenilworth Avenue Roadway Characteristics by Segments

2.6.3 Roadway Lighting

There are three lighting conditions within the corridor: locations of adequate lighting; locations where existing lighting is inadequate; and, areas where there is no lighting.

AASHTO's *Informational Guide for Roadway Lighting* was referenced to determine lighting levels and uniformity of luminance along the corridor and at the interchanges within the study area. According to AASHTO, the average maintained horizontal illuminance should be in the range of 0.6 to 0.8 footcandles for both mainline portions of the roadway and all ramps.

A review of the lighting fixtures in the corridor was conducted to determine structure height, luminaire wattage, locations and lighting arm lengths (see Photo 26). Based on a review of these factors, there are three lighting conditions within the corridor:

- Locations of adequate lighting;
- Locations where lighting does not meet AASHTO's criteria and additional lighting may be required (see Photo 27); and
- Locations where there is no lighting.

Photo 24: Typical slip ramp entrance between Nannie Helen Burroughs Avenue and Eastern Avenue

Photo 26: Typical median lighting throughout the Kenilworth Avenue Corridor

2.6.4 Guide Signage

Many of the signs along the corridor are in poor condition.

There is a mix of guide signage in the corridor that includes bridge-mounted, overhead, and ground-mounted signs. Many of the signs are in poor condition and do not effectively communicate major exits within the corridor (see Photo 28).

The FHWA's Manual on Uniform Traffic Control Devices (MUTCD) prescribes the use of multiple advance signs within a corridor.

Photo 25: Typical cross-section of Kenilworth Avenue between Nannie Helen Burroughs Avenue and Eastern Avenue

Photo 27: Substandard lighting condition at Eastern Avenue overpass

Photo 28: Polk Street guide signing illustrates substandard use of pedestrian bridge; also, motorist using this exit must follow a circuitous route to reach their destination

Along Kenilworth Avenue, there is often only one sign at any individual exit. It was also found that in some cases, supplemental signage has been added to overhead structures that do not meet MUTCD standards for distance legibility.

2.6.5 Operational Characteristics

Kenilworth Avenue serves as a major commuter route into Washington, DC with over 140,000 vehicles crossing the Maryland State Line at Eastern Avenue daily. At the southern limits of the study area, just under 110,000 vehicles per day (vpd) were measured immediately north of Pennsylvania Avenue. Between these two points, the majority of vehicles entering and leaving the corridor do so at East Capitol Street and Benning Road.

Generally, the configuration of these interchanges is designed to accommodate the demand; however, all five interchanges within the corridor provide varying degrees of access (see Figure 2.13).

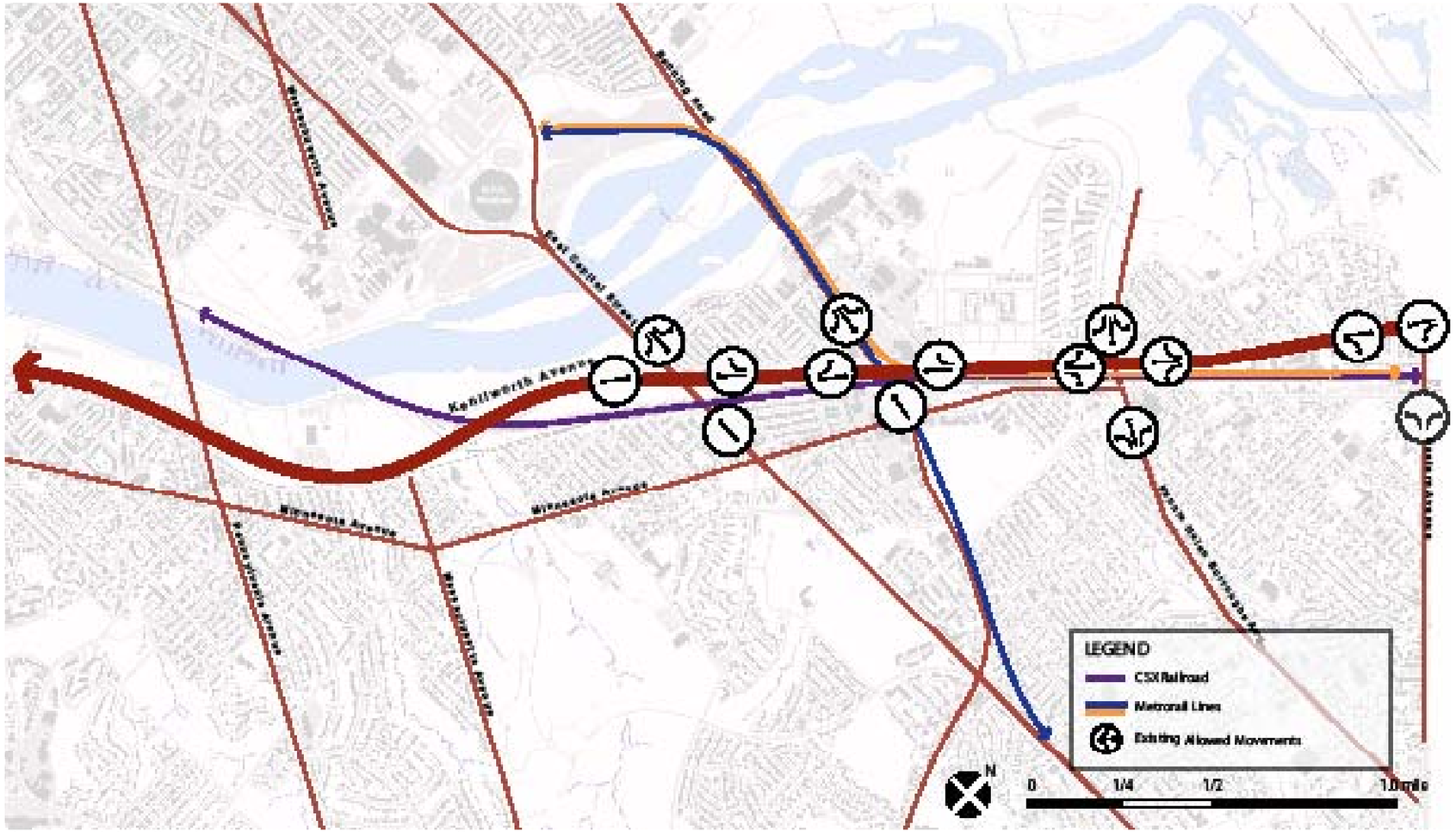

Figure 2.13: Existing Allowed Movements at Intersections along Kenilworth Avenue

Pennsylvania Avenue Interchange

Pennsylvania Avenue has been analyzed as part of the *Middle Anacostia Crossing Study*. It provides full interconnectivity between Pennsylvania Avenue and Kenilworth Avenue, except for one missing movement: there is no provision for southbound Kenilworth Avenue traffic to exit to westbound Pennsylvania Avenue. For the movements provided, all are free-flowing except for the eastbound Pennsylvania Avenue movement to northbound Kenilworth Avenue, which requires a left turn at a signalized intersection.

East Capitol Street Interchange

East Capitol Street is classified as a Principal Arterial; it extends from downtown Washington, DC eastward into Maryland. Within Maryland, the roadway continues as Maryland Route 214 that continues east to the Capitol Beltway (Interstate 495). The roadway is 48 feet wide, divided, with three travel lanes in each direction. The posted speed limit is 40 mph. The roadway is straight and forms the eastern axis with the US Capitol per the L'Enfant Plan.

In terms of traffic volumes, two primary movements occur at this interchange: southbound Kenilworth Avenue to westbound East Capitol Street, and eastbound East Capitol Street to northbound Kenilworth Avenue (see Figure 2.13). To accommodate these movements, high-speed ramps are provided in both directions. These ramps are directly related to the significant change in cross-section that occurs in Kenilworth Avenue at this interchange as a southbound lane is dropped and northbound lane added to accommodate the ramp movements.

In addition to these two movements, through movement is provided in both directions on East Capitol Street. Eastbound East Capitol Street traffic may also exit southbound onto Kenilworth Avenue.

There are five missing movements at this interchange. Southbound traffic on Kenilworth Avenue cannot exit to eastbound East Capitol Street, northbound traffic cannot exit westbound or eastbound onto East Capitol Street, and westbound traffic on East Capitol Street cannot exit either southbound or northbound onto Kenilworth Avenue.

Another significant aspect of this interchange is its overall geometric relationship to Kenilworth Avenue and the adjacent CSX Railroad tracks. This interchange was designed to accommodate the now abandoned Barney Circle Freeway, a proposed crossing of the Anacostia River that would have connected Kenilworth Avenue with the Southeast-Southwest Freeway (I-395). As a result, the horizontal alignment for Kenilworth Avenue south of East Capitol Street lies further to the west than would otherwise be required, and there is excess land isolated between the existing alignment and the CSX Railroad and excess pavement on northbound Kenilworth Avenue.

As East Capitol Street passes beneath Kenilworth Avenue, the right-of-way narrows to a concrete canyon oriented to automobiles. This underpass extends beyond Minnesota Avenue.

Photo 29: Benning Road exit weaving section

Photo 30: Cross Section of Nannie Helen Burroughs Avenue under Kenilworth Avenue

Photo 31: Eastern Avenue above Kenilworth Avenue

Benning Road Interchange
Benning Road is a Principal Arterial highway that extends from northeast Washington, DC to East Capitol Street. It is part of the Great Streets Initiative. Benning Road traverses Kenilworth Avenue on a 68-foot wide bridge with two travel lanes in each direction. The bridge is high enough to provide adequate clearance not only for Kenilworth Avenue but also for the CSX Railroad to the east. The posted speed limit is 30 mph.

The interchange itself is a complex three-level facility, as southbound Kenilworth Avenue is depressed relative to northbound Kenilworth Avenue to permit an at-grade intersection with Benning Road. It is substandard in many respects. Movements are limited and those that do exist are unsafe.

For example, the exit and entrance ramps along northbound Kenilworth Avenue are on the left side. This allows vehicles on northbound Kenilworth Avenue to exit to westbound Benning Road and for eastbound traffic on Benning Road to exit to northbound Kenilworth Avenue. However, there are often conflicts between vehicles exiting Kenilworth Avenue and those entering from Benning Road due to limited acceleration and deceleration distance and the requirement for them to cross paths in order to reach their desired lane (See Photo 29).

Southbound traffic on Kenilworth Avenue is able to exit to westbound Benning Road and also make use of a U-turn at the at-grade intersection to return to northbound Kenilworth Avenue. Eastbound traffic on Benning Road can exit to southbound Kenilworth Avenue or use the at-grade intersection to go northbound.

Four movements are missing at this interchange: southbound and northbound Kenilworth Avenue traffic cannot exit to eastbound Benning Road, and westbound Benning Road traffic cannot exit to northbound and southbound Kenilworth Avenue.

Nannie Helen Burroughs Avenue
Nannie Helen Burroughs Avenue is classified as a Minor Arterial. To the west, it connects to the main entrance of the Kenilworth Aquatic Gardens. To the east, it extends as far as Eastern Avenue. It is one of the designated streets in the Great Streets Initiative. The roadway is typically 44 feet wide, undivided, and generally provides two travel lanes in each direction.

At Kenilworth Avenue, Nannie Helen Burroughs Avenue is divided and the posted speed limit is 35 mph. At its intersection with Kenilworth Avenue, the roadway travels under the avenue and the adjacent CSX Railroad bridge. As a result, the cross-section for Nannie Helen Burroughs Avenue is narrow at this point (see Photo 30).

This interchange is scheduled to be reconstructed in 2007. It currently allows for full movement in all directions to and from Kenilworth Avenue and Nannie Helen Burroughs Avenue. The reconstruction will improve traffic safety and provide for better access through the interchange for pedestrians and bicyclists.

Eastern Avenue
Eastern Avenue is a Minor Arterial; it forms the northeastern boundary between Washington, DC and Maryland. Traveling west, Eastern Avenue terminates at the exit ramp to the southbound service road for Kenilworth Avenue. To the east, it extends as far as Southern Avenue, connecting to Martin Luther King, Jr. Highway (MD 704). The roadway is typically 40 feet wide, undivided, and it generally provides two travel lanes in each direction. The posted speed limit is 30 mph.

A gateway portal to the District of Columbia, the Eastern Avenue interchange is the first impression many visitors have of the city as they drive southbound to Kenilworth Avenue from the Baltimore-Washington Parkway. Eastern Avenue provides important access to the Deanwood Metrorail Station, the Kenilworth Aquatic Gardens, and the Kenilworth, Eastland Gardens, and Deanwood neighborhoods. The interchange is three legged with no western leg; it provides all movements, including the ability for south- and northbound traffic on Kenilworth Avenue to make a U-turn (see Photo 31). This is a particularly important function for southbound traffic, as it allows vehicles to return north onto an access road to an industrial park located in the northeast quadrant of the interchange.

The Eastern Avenue bridge was constructed in the 1950s. It is unattractive and, due to low clearance over Kenilworth Avenue, has been repeatedly struck by trucks and damaged.

2.6.6 Other Major Roadways in the Study Area

Massachusetts Avenue
Massachusetts Avenue is classified as a Collector; it traverses the study area in a generally east-west direction. The roadway is discontinuous at the Anacostia River, terminating at 17th Street, NE in Ward 6 and beginning again just west of Randle Circle in Ward 7. The roadway is 36 feet wide, generally undivided, and it provides two travel lanes in each direction. On-street parking is permitted in certain locations at selected times of the day. The posted speed limit is 30 mph.

Minnesota Avenue
Minnesota Avenue, a Minor Arterial, parallels Kenilworth Avenue to the east. The roadway is 40 feet wide, generally undivided, and it provides two travel lanes in each direction. Minnesota Avenue is discontinuous north of Nannie Helen Burroughs Avenue. The posted speed limit is 30 mph.

With the exception of East Capitol Street, Minnesota Avenue intersects all of the discussed roadways as an at-grade intersection. At East Capitol Street, however, Minnesota Avenue is grade separated on an overpass.

2.6.7 Traffic Counts

At the Maryland state line, Kenilworth Avenue carries over 140,000 vpd (see Figure 2.14). At the southern end of the corridor, just north of Pennsylvania Avenue, the volume is just under 110,000 vpd.

Of the four major arterial highways intersecting Kenilworth Avenue, the highest daily volumes were observed on the two main commuter routes, East Capitol Street and Benning Road.

The majority of traffic in the study corridor consists of passenger cars, followed by recreational vehicles and trucks. The daily vehicle composition is fairly consistent throughout the corridor.

The service roads experience a substantial increase in traffic volumes during the peak hours.

Vehicle Classifications

At each end of the corridor, vehicle classification data was collected over a 72-hour period. The classification data documents the mix of vehicles in the traffic stream including passenger cars, buses, and trucks (see Table 2.5).

When considering the 24-hour, three-day average, the majority of traffic in the study corridor consists of passenger cars (74% - 79% for the three-day average). See Table 2.5. Recreational vehicles (pickups, panels, vans, and other vehicles such as campers, and motor homes) make up approximately 15% of the traffic.

The combined volume and corresponding percentage of trucks (Classifications 5 through 13) range between 4.9% and 6.3%. Single unit

Figure 2.14: Average Daily Traffic Volumes on Major Roadways that connect to Kenilworth Avenue

Class	Type	South Portal (at Pennsylvania Avenue)		North Portal (at Eastern Avenue)	
		Northbound	*Southbound*	*Northbound*	*Southbound*
1	MC	0.1%	0.1%	0.1%	0.1%
2	P	78.0%	79.8%	79.1%	74.1%
3	RV	15.2%	14.4%	14.8%	18.9%
4	Bus	1.0%	0.7%	1.2%	0.6%
5	SU (2)	2.6%	2.6%	2.7%	3.2%
6	SU (3)	0.6%	0.5%	0.4%	0.5%
7	SU (4)	0.1%	0.3%	0.0%	0.0%
8	WB (4)	1.2%	0.8%	0.9%	2.0%
9	WB (5)	0.6%	0.7%	0.6%	0.4%
10	WB (6)	0.2%	0.1%	0.1%	0.1%
11	WB (5)(2)	0.0%	0.0%	0.0%	0.0%
12	WB (6)(2)	0.1%	0.0%	0.0%	0.0%
13	WB (7)(2)	0.2%	0.1%	0.1%	0.1%
5-13	**All Trucks**	**5.7%**	**5.0%**	**4.9%**	**6.3%**

MC = Motorcycles
P = Passenger Cars
RV = Recreational Vehicle (pickups, panels, vans, and vehicles such as campers, and motor homes)
Bus = Buses
SU (X) = Single Unit Trucks (Number of Axles)
WB (X) = Wheel Base Trucks (Number of Axles)
WB (X) (X) = Wheel Base Trucks (Number of Axles)(Number of Trailers)

Table 2.5: 24-Hour Vehicle Classification Summary, Three-Day Average

Class	Type	South Portal (at Pennsylvania Avenue)				North Portal (at Eastern Avenue)			
		Northbound		*Southbound*		*Northbound*		*Southbound*	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	MC	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
2	P	77.3%	76.2%	77.0%	80.8%	80.0%	82.1%	75.2%	77.2%
3	RV	17.7%	15.6%	16.5%	14.6%	14.7%	12.1%	16.9%	17.2%
4	Bus	0.5%	1.0%	0.7%	0.7%	0.9%	1.6%	0.8%	0.4%
5	SU (2)	2.4%	2.9%	3.1%	2.1%	2.8%	2.0%	3.5%	2.4%
6	SU (3)	0.7%	0.5%	0.6%	0.4%	0.3%	0.2%	0.4%	0.3%
7	SU (4)	0.1%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%
8	WB (4)	0.8%	2.3%	0.8%	0.9%	0.7%	1.2%	2.5%	2.0%
9	WB (5)	0.4%	0.5%	0.7%	0.3%	0.5%	0.4%	0.6%	0.2%
10	WB (6)	0.1%	0.5%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%
11	WB (5)(2)	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12	WB (6)(2)	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
13	WB (7)(2)	0.0%	0.4%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%
5-13	**All Trucks**	**4.5%**	**7.2%**	**5.7%**	**3.8%**	**4.4%**	**4.1%%**	**7.1%**	**5.1%**

MC = Motorcycles
P = Passenger Cars
RV = Recreational Vehicle (pickups, panels, vans, and vehicles such as campers, and motor homes)
Bus = Buses
SU (X) = Single Unit Trucks (Number of Axles)
WB (X) = Wheel Base Trucks (Number of Axles)
WB (X) (X) = Wheel Base Trucks (Number of Axles)(Number of Trailers)

Table 2.6 - Peak-Hour Vehicle Classification Summary, Three-Day Average

trucks (delivery vans, dump trucks, concrete trucks, etc.) make up approximately 3% of the vehicle mix.

The remaining vehicles are tractor-trailer type trucks. The majority of the tractor-trailer trucks are single trailer vehicles and only a small percentage were multi-trailer trucks.

Table 2.6 summarizes the peak hour vehicle classification at the south and north portals of the corridor. The data is based on a three-day average.

- At Pennsylvania Avenue during the AM peak hour, more trucks exit than enter the corridor. At Pennsylvania Avenue during the PM peak hour, more enter than exit the corridor.

- At Eastern Avenue, during the AM and PM peak hours, more trucks enter the corridor than leave it.

The daily vehicle composition is fairly consistent throughout the corridor (Table 2.5). However, on a daily basis, the total volume of trucks decreases as one progresses through the corridor in either direction. For example, in the northbound direction, 5.7 percent of the vehicles entering the corridor at Pennsylvania Avenue daily are trucks, while trucks make up only 4.9% of the vehicles exiting at Eastern Avenue. The majority of truck traffic also occurs during off-peak hours.

There is a substantial increase in traffic volumes along the service roads during

the peak hours. This can be attributed to commuters bypassing congestion or choosing to exit earlier because they perceive this to be safer. The locations of the slip ramps encourage commuter travelers to divert from Kenilworth Avenue onto the service roads when there is congestion.

2.6.8 Traffic Operations

Kenilworth Avenue operates at LOS F in the southbound direction during the AM peak hour. During the PM peak hour, the Avenue functions at LOS F between Pennsylvania Avenue and Benning Road, and LOS E between Benning Road and Eastern Avenue, in the northbound direction.

Capacity Analysis

A Level of Serviec (LOS) capacity study was conducted for Kenilworth Avenue. LOS describes the ability of a roadway or intersection to accommodate prevailing traffic volumes. There are six LOS ratings, ranging from A to F, with A representing the optimum operating conditions and F representing congestion (see Table 2.7).

The methodologies for measuring level of service vary depending on the type of facility under evaluation. For this study Kenilworth Avenue was divided into segments, including the following:

- Basic freeway segments of highway not influenced by ramp or weaving segments.
- Ramp segments including on-ramps (ramp merges) and off-ramps (ramp diverges).
- Weaving segments created when two or more traffic streams cross in the same general direction.

Traffic operations along adjacent or intersecting arterial highways were analyzed with the signalized or unsignalized intersection methodologies in the HCM.

Level of Service	Basic Freeway Segments (pc/mi/ln)	Merge and Diverge Areas (pc/mi/ln)	Weaving Areas (pc/mi/ln)	Signalized Intersections (sec/veh)	Unsignalized Intersections (sec/veh)
A	0 – 11	≤ 10	≤ 10	≤ 10	0 - 10
B	> 11 – 18	> 10 – 20	> 10 – 20	> 10 – 20	> 10 – 15
C	> 18 – 26	> 20 – 28	> 20 – 28	> 20 – 35	> 15 – 25
D	> 26 – 35	> 28 – 35	> 28 – 35	> 35 – 55	> 25 – 35
E	> 35 – 45	> 35	> 35 – 43	> 55 – 80	> 35 – 50
F	> 45	Exceeds Capacity	> 43	> 80	> 50

pc/mi/ln = Density in Passenger Cars per Mile per Lane
sec/veh = Delay in Seconds per Vehicle

Table 2.7: Level of Service Criteria

Freeway Segments	Northbound		Southbound	
	AM Peak	*PM Peak*	*AM Peak*	*PM Peak*
Pennsylvania Avenue to East Capitol Street	D	F	F	F
East Capitol Street to Benning Road	C	F	F	D
Benning Road to Nannie Helen Burroughs Avenue	C	E	F	D
Nannie Helen Burroughs Avenue to Eastern Avenue	C	E	F	D
Eastern Avenue to Maryland State Line	D	F	F	E

Table 2.8: Levels of Service for Freeway Segments Along Kenilworth Avenue

Analysis of Kenilworth Avenue

Level of Service for basic freeway segments along Kenilworth Avenue are shown in Table 2.8. Kenilworth Avenue operates at LOS F throughout the corridor during the AM peak hour in the southbound direction.

During the PM peak hour in the northbound direction, Kenilworth Avenue operates at LOS F between Pennsylvania Avenue and Benning Road and north of Eastern Avenue. However, between Benning Road and Eastern Avenue, the roadway operates at LOS E.

Most of the north- and southbound ramp merges and diverges operate at LOS E or LOS F in the peak direction. Similarly, the peak direction weaving sections operate at LOS E or LOS F.

Synchro/SimTraffic Operations Model

Average speeds were observed across the corridor at various times and days. During the

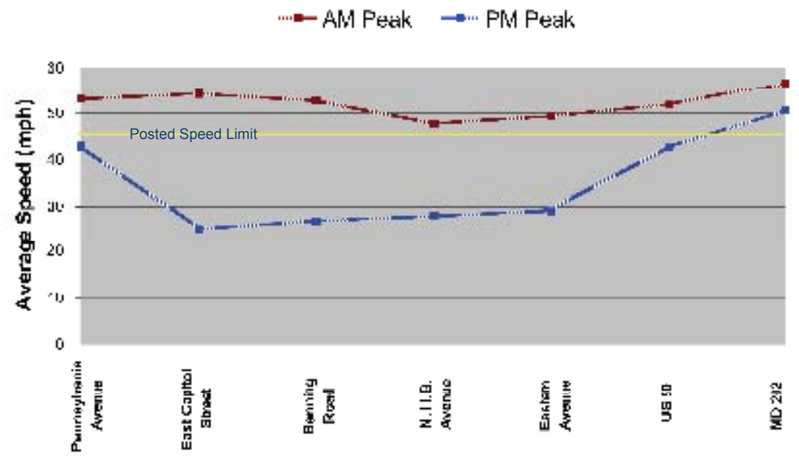

Figure 2.15: Average speed along northbound Kenilworth Avenue

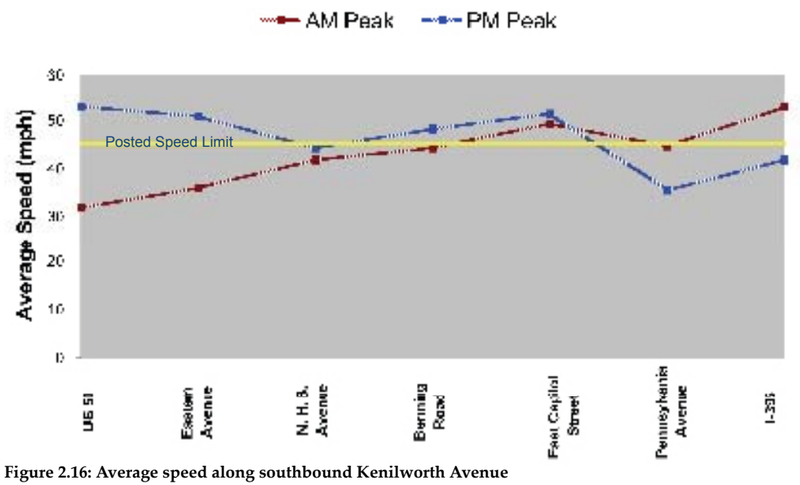

Figure 2.16: Average speed along southbound Kenilworth Avenue

AM peak hour, vehicle speeds are low at the northern end of the corridor and increase as vehicles travel south (see Figure 2.15). During the PM peak hour, vehicle speeds tended to decrease as vehicles traveled south to north (see Figure 2.16). Note that the posted speed limit (shown by the yellow line) is 45 miles per hour. Average speeds are high in the non-peak directions.

2.6.9 Traffic Safety

Crash data for Kenilworth Avenue and five signalized intersection were collected and analyzed for a three year period (2001 to 2003). Nearly 65% of crashes along the corridor occur between the Benning Road and Eastern Avenue interchanges.

Analysis of Kenilworth Avenue

For this study, Kenilworth Avenue crash data for the three most recently available years were reviewed. Over this period, 485 crashes occurred along the corridor :

- 129 crashes occurred in 2001;
- 141 crashes occurred in 2002; and
- 215 crashes occurred in 2003.

This represents a 67% increase in crashes between 2001 and 2003.

Crash rates are an effective tool for measuring safety hazards at a particular location, as they combine crash frequency with traffic volume. Crash rates are expressed in "crash per Million Vehicle Miles Traveled" (MVMT) for highway locations or "crash per Million Entering Vehicles" (MEV) for intersection locations.

The highest crash rates occur north of East Capitol Street, and particularly north of Benning Road. Figure 2.17 shows the distribution of crashes between the interchanges along Kenilworth Avenue.

Nearly 65% of the crashes occurred between Benning Road and Eastern Avenue. Crash locations remained relatively constant over the three year period.

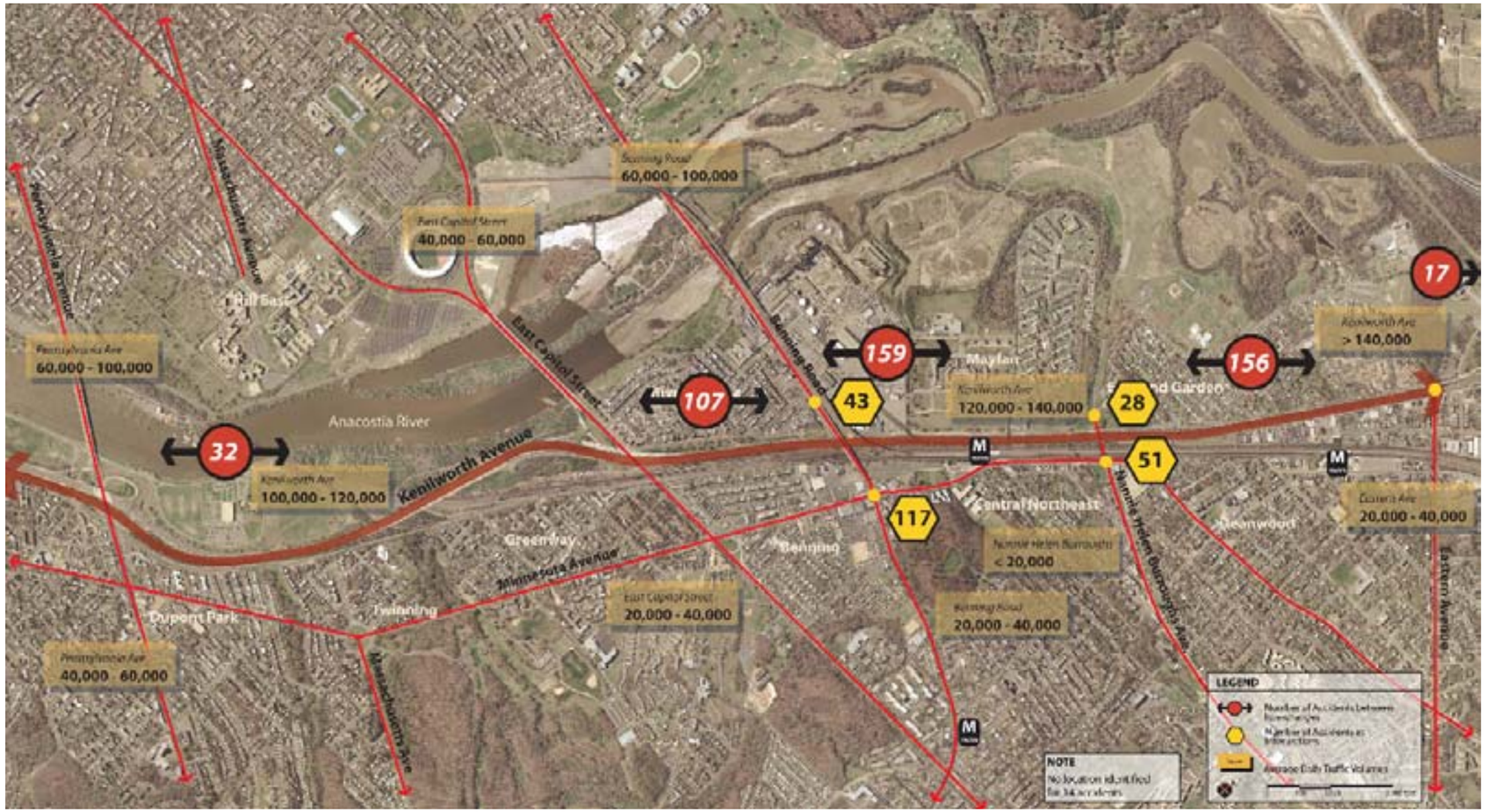

Figure 2.17: Crash data for years 2001, 2002 and 2003, between Kenilworth Avenue interchanges and at five signalized intersections adjacent to the corridor.

Analysis of Intersections

During the three-year period, there were a total of 292 crashes at the five following signalized intersections:

- Benning Road and Minnesota Avenue (117);
- Benning Road and 34th Street (43);
- Nannie Helen Burroughs Avenue and Minnesota Avenue (51);

Intersection	No. of Crashes				Percent of Total Crashes Involving Injury	Most Common Types of Crashes	Times Most Crashes Occur	Days Most Crashes Occur
	Year 2001	Year 2002	Year 2003	Total				
Benning Road and Minnesota Avenue	53	36	28	117	60%	rear-end side swiped left turn hit vehicle head on	6:30 PM and 7:30 AM 8% in AM peak hour 26% in the PM peak hour	Weekdays
Benning Road and 34th Street	18	10	15	43	60%	rear-end side swiped	6:30 PM and 7:30 AM 12% in AM peak hour 23% in PM peak hour	Weekdays
Nannie Helen Burroughs Avenue and Minnesota Avenue	15	18	18	51	84%	rear-end right angle left turn hit vehicle	6:30 PM and 7:30 AM 6% in the AM peak hour 12% in the PM peak hour.	Weekdays
Nannie Helen Burroughs Avenue and Kenilworth Avenue	7	15	6	28	46%	rear-end right angle side swiped	6:30 PM and 7:30 AM 11% in the AM peak hour 18% in the PM peak hour.	Weekdays
Eastern Avenue and Kenilworth Avenue service road	23	13	17	53	42%	rear-end side swiped	6:30 PM and 7:30 AM 10% in the AM peak hour 13% in the PM peak hour 20% between 1:30 and 4:00 PM	Weekends

Table 2.9: Summary of Intersection Crash Data

- Nannie Helen Burroughs Avenue and Kenilworth Avenue (28); and
- Eastern Avenue and Kenilworth Avenue service road (53).

A review of the crash data is summarized in Table 2.9.

2.7 Transit Service

There appear to be few transit deficiencies in the vicinity of the Kenilworth Avenue Corridor Study Area. Excellent neighborhood-based collector routes are in place, serving as feeder/distributor functions to Metrorail stations, including Deanwood, Minnesota Avenue, and Benning Road.

Residents of some neighborhoods such as Central Northeast, that lies between Nannie Helen Burroughs Avenue and Benning Road/ Central Avenue, must walk about 0.4 mile to one of the above roads to access transit service. Transit service on these roads is quite frequent with 10 minute peak headways on Route U8. In addition, the Benning Road Metrorail Station on the Blue Line serves the neighborhood. Also, some residents of the western-most portions of the neighborhood between Minnesota Avenue and Anacostia Park, south of East Capitol Street may experience three or four block walks to reach transit routes on Minnesota Avenue. All other neighborhoods are served by a bus route or Metrorail station within a 1/4 mile radius.

2.7.1 Metrorail

The Metrorail Orange Line extends from the New Carrollton Metrorail Station in Prince George's County, Maryland to the Vienna/ Fairfax-GMU Metrorail Station in Fairfax County, Virginia. Within the study area, the Orange Line operates at-grade, parallel and adjacent to Kenilworth Avenue with stops at Deanwood Metrorail Station, which is near Eastern Avenue, and Minnesota Avenue Metrorail Station near Benning Road.

South of the Minnesota Avenue Metrorail Station, adjacent to Benning Road, the Orange Line is joined by the Blue Line before crossing the Anacostia River.

Photo 31: Deanwood Metrorail Station

Deanwood Metrorail Station
The Deanwood Metrorail Station is located at ground level along the north side of Minnesota Avenue, NE, between 48th Street and Nash Street (see Photo 32). The station has two elevators and two escalators that connect the street, mezzanine and platform levels.

Minnesota Avenue Metrorail Station
The Minnesota Avenue Metrorail Station is located at ground level adjacent to the Amtrak Northeast Corridor right-of-way between Minnesota Avenue and Kenilworth Avenue. The entrance is at Grant Street, NE. The station has two elevators and two escalators which connect the street, mezzanine and platform levels.

2.7.2 Metrobus

Metrobus routes serve the Kenilworth Avenue Corridor mostly along arterial roads such as Minnesota Avenue, Benning Road, East Capitol Street, and Pennsylvania Avenue. A majority of this service is oriented toward downtown, mostly along Pennsylvania Avenue.

Some of the neighborhoods in the study area, such as Eastland Gardens and Dupont Park, have limited access to the bus routes due to natural or man-made impediments, including Kenilworth Avenue, the CSX and Metrorail tracks, parks, or the Anacostia River.

Other neighborhoods, like Mayfair Parkside, Greenway and River Terrace, however, are well-served by buses: where many destinations can be reached without a transfer, those that cannot can usually be reached by connecting to Metrorail. The local network has excellent interconnectivity with the Metrorail system, making the entire region accessible by transit. Generally, there is good local collector/ distributor feeder service in the vicinity of the corridor and adjoining neighborhoods.

2.7.3 Streetcar and Trolley Service

Though no BRT or streetcar route is in operation in DC or the region today, both are being considered as part of the *District of Columbia Transit Alternatives Analysis (DCAA)*. In addition to the Anacostia Streetcar line, proposed for southeast Washington, nine route alternatives, which could be streetcar or BRT routes but likely will start as Rapid Bus routes, are recommended by the DCAA. Five of these have direct impact on the Kenilworth Avenue Corridor.

The proposed Anacostia Streetcar starter-line will operate wholly on city streets from a southern terminus at Bolling Air Force Base near South Capitol Street and Firth Stirling Avenue to the Anacostia Metrorail Station.


Photo 32: Metrobus transfer station at Minnesota Avenue Metrorail Station

Several extensions and segments of other routes operating in common alignment with the Anacostia Streetcar line are also under study. As part of the DCAA, the following routes, which would operate in the vicinity of the Kenilworth Avenue Corridor, are being studied and evaluated:

- Minnesota Avenue Metrorail Station to Bolling AFB
- Georgetown/Crosstown to Minnesota Avenue Metrorail Station
- Friendship Heights Metrorail Station via Georgetown/Crosstown to Minnesota Avenue Metrorail Station
- Georgetown/SW Waterfront to Minnesota Avenue Metrorail Station
- Friendship Heights Metrorail Station via Georgetown/SW Waterfront to Minnesota Avenue Metrorail Station

2.7.4 Bus Rapid Transit/Other Transit Plans

In addition to these routes, one Rapid Bus route is under study as part of the DCAA. This route would operate between Forestville and Downtown. This rapid bus route would operate through the Kenilworth Avenue Corridor study area on Pennsylvania Avenue, SE, intersecting at Minnesota Avenue.

Alignments, station locations and modes have not yet been finalized. Future extension of the Anacostia Streetcar to Deanwood Metrorail Station could be implemented when the two discontinuous segments of Minnesota Avenue are connected. This would provide transit service along the Anacostia River corridor from Eastern Avenue to Bolling Air Force Base. Radial connections would be at Benning Road, East Capitol Street, and Pennsylvania Avenue within the Kenilworth Avenue Corridor study area, and Good Hope Road, Martin Luther King Jr. Avenue, the Anacostia Metrorail Station, and South Capitol Street beyond.

Such service would likely increase north-south mobility in the corridor, as well as provide opportunities for Transit-Oriented Development (TOD) at important transfer points and commercial centers. Continuous transit service in the Anacostia River corridor has not previously been provided; transit has been oriented radially to and from downtown. Improved transit service would likely reduce dependence on the automobile and alleviate congestion in the corridor.

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